

FORESTS

Lift it with your little finger!

McCULLOCH

3-25

HORSEPOWER POUNDS

Incredible! You'll say so yourself when you first lift a McCulloch 3-25 *one-man* chain saw. You'll be even more surprised when you saw with it. How that little yellow fellow can cut!

Light and Fast Cutting Judging by the way the McCulloch 3-25 cuts, you'd think it should weigh 40 to 50 lbs. The fact that it doesn't—that it weighs only 25 lbs.—is a tribute to McCulloch engineering.

THERE'S A McCULLOCH FOR EVERY TIMBER-CUTTING JOB



20" Model 5-49 ... \$385

30" Model 5-49 ... \$395

40" Model 5-49 ... \$405

50" Model 5-49 ... \$415



18" Model 3-25 ... \$295

24" Model 3-25 ... \$305

30" Model 3-25 ... \$315



60" Model 5-49 ... \$425



20" 5-49 Bow Saw...\$425



15" 3-25 Bow Saw...\$325

All prices f.o.b. Los Angeles

**SEND FOR FREE LITERATURE
AND NAME OF NEAREST DEALER**

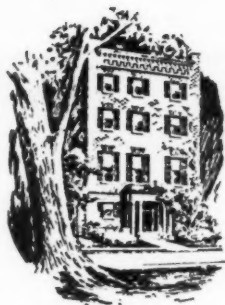
3-25 HAS EVERY FEATURE

- ★ 3 hp. ★ 25 lbs. weight, complete with 18" blade and chain
- ★ Automatic clutch ★ Built-in chain oiler
- ★ Full-power sawing at any angle
- ★ Kickproof rewind starter
- ★ Easily accessible ignition points
- ★ One-hand controls

NATIONWIDE SALES AND SERVICE

McCULLOCH MOTORS Corporation

6101 West Century Blvd., Los Angeles 45, Calif.



THE AMERICAN FORESTRY ASSOCIATION

A. C. SPURR
President

SAMUEL T. DANA
Vice-President

RANDOLPH G. PACK
Vice-President

S. L. FROST
Executive Director

JOHN M. CHRISTIE
Treasurer

FRED E. HORNADAY
Secretary

BOARD OF DIRECTORS

BRUCE C. BROWNING, 1950—Ohio,
Muskingum Watershed Conservan-
cy District.

W. J. DAMTOFT, 1952—North Caro-
lina, Southern Pulpmood Conserva-
tion Association.

SAMUEL T. DANA, 1950—Michigan,
School of Forestry and Conserva-
tion, University of Michigan.

C. H. FLOREY, 1950—South Carolina,
Association of State Foresters.

KARL T. FREDERICK, 1952—New
York, New York State Conserva-
tion Council.

WILLIAM B. GREELEY, 1951—
Washington, West Coast Lumber-
men's Association.

DON P. JOHNSTON, 1952—North
Carolina, North Carolina Forestry
Association.

KENT LEAVITT, 1951—New York,
National Association of Soil Con-
servation Districts.

GEORGE W. MERCK, 1950—New
Jersey, Merck & Co., Inc.

WALTER H. MEYER, 1951—Connecti-
cut, Yale School of Forestry.

RANDOLPH G. PACK, 1952—New
York, Charles Lathrop Pack For-
estry Foundation.

LLOYD E. PARTAIN, 1951—Pennsyl-
vania, The Curtis Publishing Com-
pany.

THEODORE S. REPPLIER, 1951—
District of Columbia, The Adver-
tising Council, Inc.

JAMES J. STORROW, 1952—New
Hampshire, Society for the Protec-
tion of New Hampshire Forests.

WILLIAM F. WHARTON, 1950—
Massachusetts, National Parks As-
sociation.

THE ASSOCIATION

The American Forestry Association is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

ERLE KAUFFMAN
Editor

JAMES B. CRAIG
Associate Editor

NORT BASER
Assistant Editor

JAMES FISHER
Art Director

VOL. 56, NO. 3

Contents

MARCH, 1950

FORESTRY AND THE PRESIDENT'S BUDGET	4
THEY HAD FAITH IN THE LAND <i>By Erle Kauffman</i>	6
THE INDOMITABLE FINNS REBUILD <i>By J. A. Cope</i>	12
IT WON'T HAPPEN IN AKRON <i>By James B. Craig</i>	14
MAPLE FESTIVAL <i>By Paul E. Denton</i>	17
THE MIRAGE OF RIVER BASIN DEVELOPMENT <i>By Bernard Frank and Anthony Netboy</i>	18
PLANTING PROSPECTS IN 1950	21
A SUPER RACE OF DOUGLAS FIR <i>By Albert Arnst</i>	22
THE 1950 TRAIL RIDER EXPEDITIONS	24
WATER AND THE CITY OF THE ANGELS—PART II <i>By W. S. Rosecrans</i>	26
ADVENTURING IN TREES AND GRASS—PART III <i>By Henry T. McKnight</i>	30
EDITORIAL	48



THE COVER

Winging their way north toward their favorite Canadian retreat, these geese add their grace and beauty to this John Kabel photo study of St. Mary's Lake in Glacier National Park, Montana. No doubt the geese spent a pleasant winter on the Pipestone Wildlife Refuge a bit further south before responding to the call of spring to head north. This sublimely scenic region is in the United States section of the International Peace Park, a superb wilderness area which also lies partly in Alberta, Canada. The area is a haven for many kinds of wildlife, and it's equally popular among lovers of the outdoors who flock there by the thousands each year to absorb the tranquillity of the setting.

AMERICAN FORESTS is published monthly by The American Forestry Association at 919 Seventeenth Street, N. W., Washington 6, D. C. Subscription price \$5 a year. The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. The Editors are not responsible for views expressed in signed articles. Entered as second-class matter at the Postoffice at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Maryland, December 29, 1931. Copyright, 1950, by The American Forestry Association.



CRUISER COMPASS

Precision-made and beautifully finished, the LEUPOLD CRUISER COMPASS is a precision instrument...the best money can buy. AN EXCLUSIVE FEATURE of the LEUPOLD CRUISER COMPASS is declination easily set off by using a coin or knife in slotted end of pinion gear. Gold-plated, rust proof needle is mounted on a ground agate jewel. Needle is locked when cover is closed. For accurate, pin point sighting the LEUPOLD CRUISER COMPASS (pocket size) has maximum size dial. Dimensions: 3 1/2-in. x 3 3/4-in. overall. Send for the LEUPOLD CRUISER COMPASS, a precise instrument you will be proud to own.

SPORTSMAN COMPASS

Ruggedly built for a lifetime of service the LEUPOLD SPORTSMAN COMPASS is a valuable aid to every hunter, fisherman and outdoorsman. Features: gold-plated, rust-proof needle mounted on agate jewel with sighting line, township plat. Order now! Send for FREE booklet: "Compass Guide."

Please send me:

- ☐ The LEUPOLD CRUISER COMPASS with money back guarantee.....\$12.75 postpaid
☐ The LEUPOLD Jr. (SPORTSMAN) COMPASS with money back guarantee.....\$7.50 postpaid

Name.....

Address.....

City.....

State.....

Write to LEUPOLD STEVENS INSTRUMENTS, Inc.
 4445 N.E. Glisan Street
 Portland 13, Oregon

LETTERS TO THE EDITOR

On Governing Ourselves

I wish to compliment AMERICAN FORESTS on its editorial in the January, 1950, issue, "The Right to Govern Themselves."

Coming from a magazine which represents the greatest cross section of conservationists in the country, this editorial should stimulate the thinking of an intelligent section of the citizenry, and awaken them to true conservation that is so often being presented by many of our federal agencies with a false approach.

W. R. Schofield

San Francisco, California

Beauty on Our Covers

Allow me to compliment you on the good taste and beauty of your magazine cover for this month (January).

More than once I have wondered why your publishers so persistently used red. And why, when the magazine contains such worthwhile material, it has seemed to ignore the idea of giving us beauty on its covers.

Mrs. Ernest Robinson

Kansas City, Missouri

From a Septuagenarian

I am nearly seventy years old and this is my first letter to any magazine.

AMERICAN FORESTS is always a pleasure to read. It is fresh, and just like being out-of-doors, and best of all it is about trees—the most beautiful things that grow on God's earth.

As I write this I look out the window where the tall dark trees reach up against the pale twilight sky. They stand, reaching up, with such grace and majesty.

And here in this room my heart is warmed by the glow of an open fire. A fire whose glowing coals and dancing flames are the sunlight captured by the forest trees and saved for a winter fire—small wonder an open fire cheers one's soul.

And so AMERICAN FORESTS, being of the forests and for the forests, is always a pleasure to me.

Robin DuBois

Washington, D. C.

Arborway Plans

You will be interested, I know, to learn that my article in AMERICAN FORESTS has already borne fruit. The National Park Service wants to include the Arborway idea in the plans for the Mississippi River National Parkway, and have appointed me as consultant.

Harlan P. Kelsey

East Boxford, Massachusetts

Thank You

There are several things regarding the January issue of AMERICAN FORESTS that I would like to congratulate you and your staff on. They are the very excellent color photograph of the winter scene in Vermont on the front cover; the excellent fire photo-

graph in color in the Caterpillar-Diesel advertisement on the back cover; the article "The People's Land," and the editorial, "The Right to Govern Themselves;" H. H. Chapman's article, "Lightning in the Longleaf;" and Mr. Fletcher Bowden's article, "Masonite in Australia." You can easily see that I think the January issue is one of the best that has come off the press in the past several months.

Monty Payne

Head, Department of Forestry
 Mississippi State College

State College, Mississippi

Next Best Thing

Each issue of AMERICAN FORESTS brings freshness of forests, waters and earth into our city lives; reading it kind of alleviates pain and compensates for some things very precious I have had and lost—a home in a forest. So thank you for it.

Lucille de S. Burden

Jackson Heights, Long Island

More Trees

Thank you for publishing the fine article in the December issue entitled, "Log Rolling in Reverse" about Benton County, written by A. K. Thurmond. This is a great thing for our county and to let the rest of the country know such a program is working may help preserve the forests we now have as well as encourage the planting of more trees.

Judge John M. Holladay

Camden, Tennessee

Jaycees on the Move

I note with interest your article "Jaycees Launch Tree Planting Project." Being a member of both The American Forestry Association and Jaycees I was doubly interested. Unless I miss my guess, the national Jaycee organization will sponsor an even greater forestry program next year.

We greatly appreciate the article.

Ben Boatwright

Johnston, South Carolina

For a Green America

After digesting the thought food in January AMERICAN FORESTS I turned to the February *Readers Digest* for dessert and was brought up short with the realization that the conservation work of The American Forestry Association ties in with the work of other organizations seeking to conserve Americanism.

In "The Road Ahead," condensed in the *Digest*, the Columbia River Project is painted very red. If the implications in this article are solidly founded and the said program is truly a football of the most powerful political bloc in the world, then surely the time has come for the AFA to join hands with organizations seeking to lead us "out of the red and into the green."

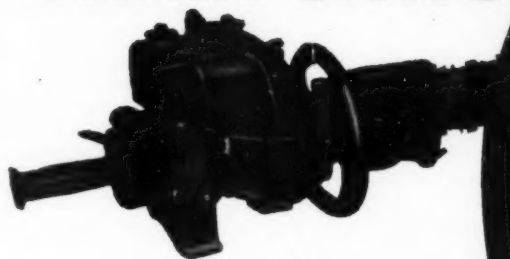
R. C. Olds

Westmont, Illinois

TITAN

BLUESTREAK

CHAIN SAWS



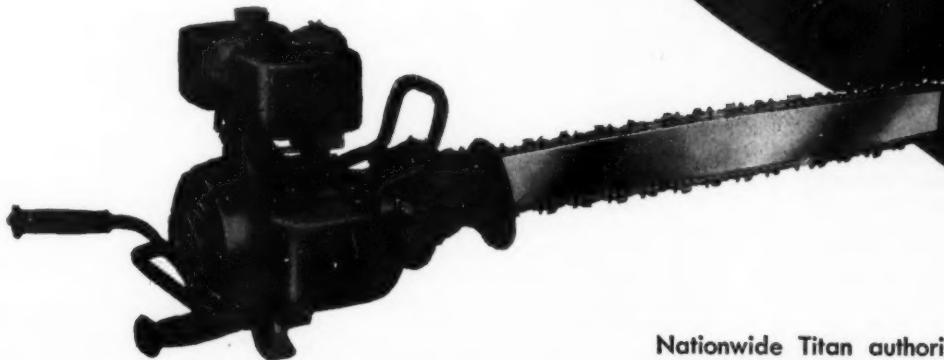
TITAN JUNIOR

5 h.p. ONE-Man Chain Saw
Weight Under 30 Pounds
Fully Automatic
Complete Bar Swivel Device

PRICED AT ONLY:

*18 inch unit	\$287.50
*26 inch unit	\$293.50
*32 inch unit	\$299.50

(*actual cutting length)



TITAN AUTOMATIC BLUESTREAK

12 h.p. Power Unit weighs 60 pounds
Fully Automatic Clutch — No Vibration
Equipped with Famous BLUESTREAK Bar
and Chains, available 2 feet to 12 feet

PRICED FROM **\$539.65**

All prices F.O.B. Seattle

"LARGE OR SMALL,
WE CUT 'EM ALL"



Nationwide Titan authorized sales
and service. Write for the name of
the Titan dealer nearest you.

TITAN CHAIN SAWS,
INC.

SEATTLE 4, WASHINGTON

Save TIME and LABOR with AERMOTOR TOWERS



AERMOTOR Steel Towers are specially constructed to save time and labor in erection. They are built to fit—with bolt holes which always match perfectly. This makes erection quicker and easier by eliminating delays and extra expense. Designed and built by men long skilled in this work, AERMOTOR

Steel Towers are a recognized standard of value wherever towers are used.

• Superior galvanizing after complete fabrication insures long life. Besides, AERMOTOR Steel Towers enjoy an enviable reputation for exceptional strength and safety.

AERMOTOR CO.
2500 ROOSEVELT ROAD-CHICAGO, ILLINOIS

TREES GROW!

Our modern sawmills and manufacturing plants are located at Toledo, Oregon, in the very heart of the finest timber-growing land in the world.

Here we have established a Tree Farm. We are applying all the knowledge science has uncovered down through the years to grow a continuing crop of trees. Our plans are not for just this year and next, but for decades on decades ahead. We plan in terms of 100 years.

Timber will come from our Tree Farms forever and we will cut each year only as much as the land will grow in a year.

C. D. JOHNSON
Lumber Corporation

Office: Portland

Mills: Toledo

FORESTRY AND THE PRESIDENT'S BUDGET

The President's budget for the fiscal year ending June 30, 1951, provides for substantial increases in most major forestry items. Most important increases recommended were in funds for reforestation, range revegetation and improvement work on the national forests; for national forest roads and trails; for the Forest Survey; for federal cooperation with states in forest fire prevention and control; for cooperation in expanding private forestry work; and for the fight against forest pests and diseases, particularly against white pine blister rust.

Important increases also were recommended for forestry work in the Bureau of Land Management of the Department of the Interior, as well as the Bureau of Indian Affairs.

Following is a breakdown of the President's recommendations for major forestry items:

General administration of the Forest Service, Department of Agriculture, \$676,500, an increase of \$21,500. For national forest protection and management: timber management, \$4,361,223, no increase; range management, \$1,263,105, an increase of \$214,507; wildlife management, \$158,010, an increase of \$25,370; water resource management, \$47,411, no increase; recreation management, \$685,164, an increase of \$94,086; maintenance of improvements, \$2,884,214, an increase of \$203,000; forest fire protection, \$7,418,938, no increase; construction of improvements, \$1,009,007, an increase of \$749,507; reforestation, \$2,071,660, an increase of \$837,706; range revegetation, \$1,196,550, an increase of \$476,289; forest personnel, \$7,542,078, an increase of \$332,039; other management uses, \$697,550, an increase of \$84,406.

For fighting forest fires the Forest Service is given \$100,000, no increase over the past year; for forest research and investigation, \$3,015,600, an increase of \$197,100; for forest products research, \$1,203,500, an increase of \$31,500; for the Forest Survey, \$1,293,500, an increase of \$427,500; for roads and trails, \$12,465,000, an increase of \$2,117,000; for forest fire cooperation, \$10,000,000, an in-

crease of \$1,000,000; for private forestry cooperation, \$2,075,400, an increase of \$975,400; for land acquisition under the Weeks Act, \$700,000, an increase of \$299,000; for land acquisition in Superior National Forest, Minnesota, \$200,000, an increase of \$125,000; other land acquisition, \$142,000, no increase.

From other Department of Agriculture appropriations, naval stores investigations, \$21,305, no increase; white pine blister rust, \$2,203,050, an increase of \$260,700; flood control, \$2,050,194, an increase of \$96,938; resurvey boundaries (Soil Conservation Service), \$51,850, a new item; naval stores conservation, \$108,425, an increase of \$1,000; and utilization research, \$248,600, a decrease of \$47,200.

For forest pests and diseases, the budget recommends \$613,500 for gypsy and brown-tail moth control, an increase of \$38,500; for the Forest Pest Control Act, \$1,006,500, an increase of \$256,500; for white pine blister rust, \$4,400,000, an increase of \$955,000; for forest insect investigations, \$533,000, no increase; and for forest diseases, \$458,300, an increase of \$56,560.

A total of \$56,597,000 was requested for the Soil Conservation Service, an increase of \$2,950,700 over the 1950 figure.

The National Arboretum took a \$17,300 cut, the President's recommendation amounting to only \$152,700.

Forestry items in the budget recommended for the Department of the Interior were as follows:

Bureau of Land Management: protection and disposal of public lands, \$5,248,955, an increase of \$1,798,955; fighting fire, \$50,000, no increase; range improvement, \$350,000, no increase; and management of Oregon and California revested lands, \$992,030, an increase of \$334,530.

Bureau of Indian Affairs: Indian forest and range, \$1,181,927, an increase of \$181,927; and fire protection, \$12,000, no increase.

National Park Service: fighting forest fires, \$30,000, no increase; and land acquisition, \$897,856, an increase of \$97,856.

PLANES USED TO SPOT POLE BLIGHT OF PINES

Successful use of planes to scout pole blight of pine was made last summer in northern Idaho. Pathologists who examined pine stands made accurate maps of blight damage by flying low over the timber and using high power field glasses. Checkups on the maps later by auto and on foot showed that the disease scouts had made accurate estimates.

First Cousin to the Forest



Forests were to be fostered

for their own sake, as sources of timber, in the dawning idea of conservation. Soon came consciousness of the forest role in control and conservation of water. Later was learned the power of trees in the toughest tasks of soil erosion and silt control.

Now we see that conservation comes not in closed compartments, but as a unified program of land utilization. Valley and hill, forest and field, wild life and farm livestock—all are parts of the intricate, interlocking pattern.

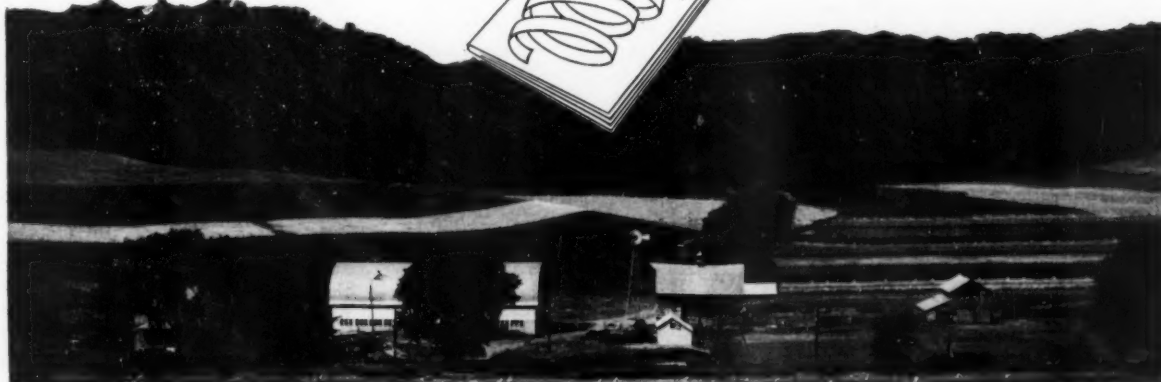
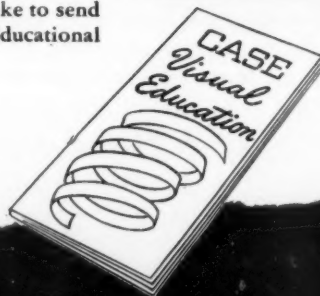
Farming methods play the dominant role in the agricultural aspects of conservation. Adoption and success of proper farming methods depend on availability and proper

use of farm implements and machines. For more than a century, providing ever-better farm machinery has been the business of the J. I. Case Co. And increasingly, for many years, Case has carried on educational work to inspire farming methods that conserve soil and water as well as human time and toil.

As materiel for conservation methods, farm machinery is kin to the forest. As a contribution to closer kinship between leaders in forestry and agriculture, Case invites you to see . . . and to use, as you can . . . the Case educational materials. They cover all the accepted soil and water conservation practices from ponds to pastures . . . grassland farming and forage feeds . . . improvement of farm fertility and farm earnings.

There are movies in full color and sound . . . bulletin-style booklets . . . wall hangers and charts. All are listed in a little catalog, "Case Visual Education Materials." We'd like to send you a copy. Address J. I. Case Co., Educational Division, Racine, Wis.

CASE





They Had Faith in the Land

At Bogalusa, deep in the heart of the Louisiana pinelands, the Gaylord Container Corporation is harvesting the "great tree-planting experiment" of a quarter century ago—the first time in this country a handplanted forest, on so vast a scale, has attained commercial value

By ERLE KAUFFMAN

DURING the somber twilight of lumbering's fabulous era in the South, when saws of many big mills were cutting through the last line of logs that separates boom town from ghost town, the name of Bogalusa was attracting an ever widening circle of interest. For around this sawmill town deep in the Louisiana pinelands, the Great Southern Lumber Company early had combined a sense of urgency with a sense of direction—and the direction it chose was calculated to lead by the shortest road to permanency in its

operation. Its vehicle was forest management, based on the best practices of its day. But the magnet that attracted such widespread attention was a tree-planting program of great scope and intensity.

At a time when the generally applied lumbering formula was to clear-cut and move on to greener and bigger timber, leaving behind desolation not only of the land but of whole communities, Great Southern's au-

dacity in staking its future on the principle of perpetual operation by growing new forests raised many eyebrows. True, the pioneering Henry E. Hardtner had already attained marked success with applied forestry and tree planting on his operations at Urania, and seemed well on his way to permanency. But for Great Southern, what was then the largest sawmill in the world, to plunge headlong into uncharted waters was something else. It called for more than audacity; it called for faith in the then developing science of for-

estry. And above all, it called for faith in the land.

This, obviously, Great Southern's founders, Frank H. and Charles W. Goodyear, had in abundance. From the beginning of their operation at the turn of the century, they had nourished a hope that means could be found to perpetuate it. Indeed, Bogalusa, which in the language of the Choctaw means "dark water," reflects this dream for, unlike most sawmill towns of the era, it was planned with an eye to the future.

Henry Hardtner's early success gave substance to the Goodyear dream. How well it materialized is vividly illustrated by the fact that today, on the thousands of desolate cutover acres restored by Great Southern's tree planting crews a quarter of a century ago, the saw and the ax have returned. For the first time in this country, on such a large scale, a hand-planted forest has attained commercial value and is actually being harvested. But more important, the community that is Bogalusa, a bustling town of 8,000 twenty-five years ago, was saved from the scrapheap of forgotten sawmill towns, and is today a thriving, going city with a population of 17,000.

A dramatic climax to this success story would be to report that the great mill of the Southern Lumber Company, which could turn out a million board feet of lumber every twenty-four hours also had bridged the gap between old and new forests. But even its founders did not contemplate this. Being long on vision, they knew only too well that as the big logs of the virgin forest went out, a new economy must come in—an economy tailored to the demand a young and vigorously growing forest could supply. The answer was paper, and years before the saws of the mill were silenced, the Bogalusa Paper Company was established. Later, in 1937, it was merged with the Gaylord Container Corporation, whose spreading pulp and paper mill dominates the industrial life of Bogalusa today.

But, happily, the story is not without great human quality. A. Conger Goodyear is chairman of Gaylord's board of directors, and Charles W. Goodyear is first vice-president.

With this tie to the past—A. Conger Goodyear was president of Great Southern during its tree-planting years—it was to be expected that Gaylord policy would place great emphasis on the forestry phase of its Bogalusa operations. This and the fact that it had acquired 260 thousand acres—later expanded to 344



Evolution of a forest. A 1925 planting crew at work on section of Great Southern cutovers in Louisiana. Seedlings were grown in company nursery



Five years later, with the young slash pine making vigorous growth—below, the stand after seventeen years and two thinnings for pulpwood





Three generations of the Miley family have planted trees at Bogalusa. In the center is Lon Miley, at right his son, B. J., at the left his grandson, Lonnie



J. K. Johnson, the company's first forester, directed planting program

thousand—of magnificent young forest, including the planted area concentrated on 57,000 acres.

In the words of Vertrees Young, Gaylord's executive vice-president, "Our timber holdings are the very bed rock on which Gaylord is built. The company is committed to a policy of land management the foremost consideration of which is permanency

of our investment and the jobs that go with it."

How this policy is translated into action is a dramatic portrayal of modern forestry at its best. But to better understand its ramifications it may be well to sketch briefly the development of the resource upon which it is based.

In the early part of the twentieth century thousands of acres surrounding Bogalusa were turning up as bare and as barren as the top of a table, the result of logging in virgin timber and repeated fires. "Our management had discussed various possibilities of saving Bogalusa from the common fate of sawmill towns—decay and desolation after the timber is gone," recalls A. Conger Goodyear, "but little was done about it until 1920

when I took a group of directors to visit the Hardtner operations at Urania."

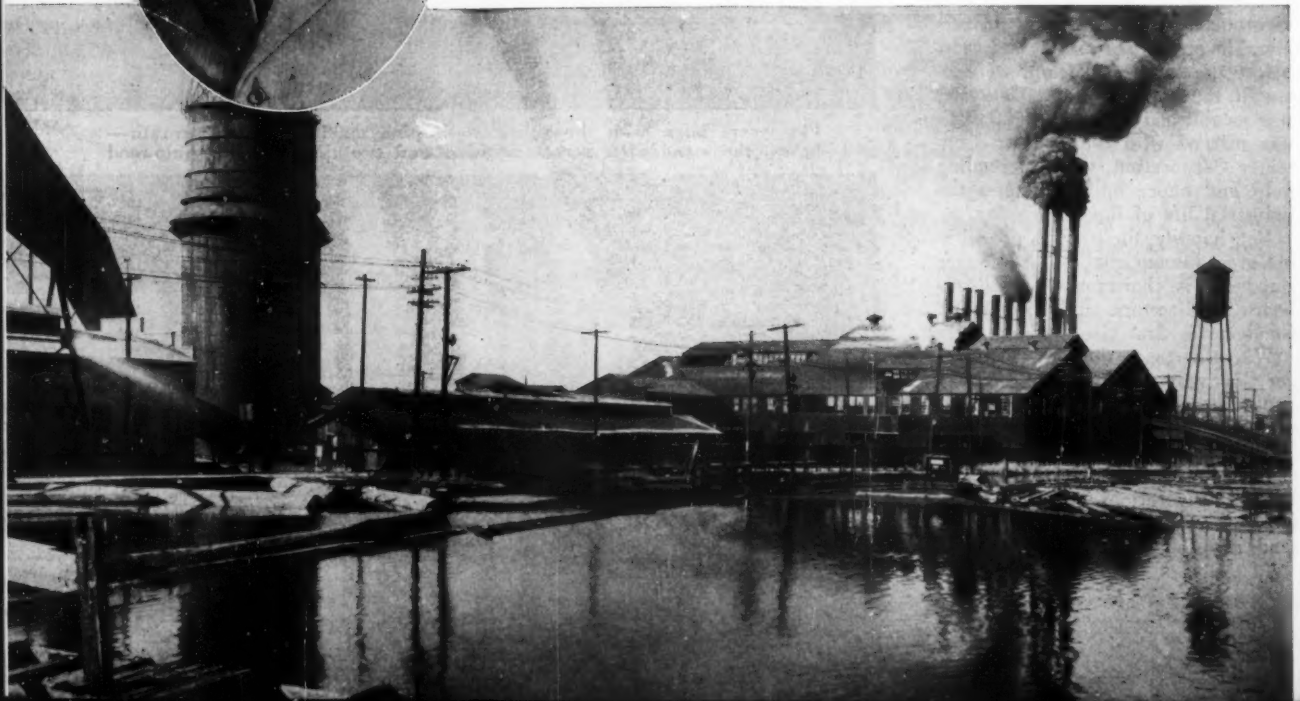
Urania, of course, was not another Bogalusa, but as early as 1904 the pioneering Henry Hardtner was planting trees on his cutover lands, developing a system of fire protection and encouraging greater care of natural reproduction in logging operations. By 1920 he was far enough along the road to insure permanence for his operation—which was what the visiting Great Southern officials were after.

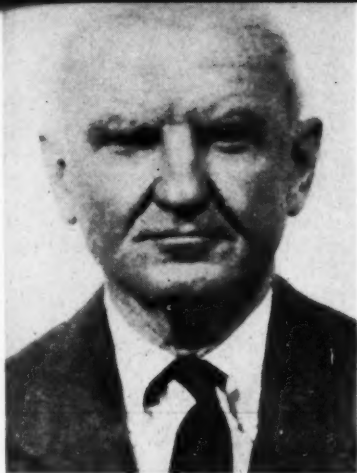
Encouraged by what he had witnessed at Urania, Mr. Conger lost little time. For consultation he turned to Dr. Austin Cary of the U. S. Forest Service, who for years had been spreading the gospel of tree planting



Great Southern's mill at Bogalusa — largest in the world — closed down when the big timber vanished. But the community it supported still prospers, thanks to the vision of its planners, one of whom, W. H. Sullivan, is shown at left

Art Studio Photo





A. Conger Goodyear, Gaylord's Board Chairman, promoted early plantings



Vertrees Young, executive vice-president, pledged to forestry



Paul M. Garrison directs forestry work of Gaylord's 340,000 acres

and practical forest management throughout the South. "Dr. Cary, despite his enthusiasm, advised us to go slow," Mr. Conger relates, "but we were in a hurry. If the thing was worth doing at all it must be done on a large scale to serve our purpose."

It was done in a hurry—and on a large scale. As a start, 800 acres were fenced off, furrows plowed eight feet apart and the seed broadcast. Another area of 380 acres was planted with wild seedlings obtained from the woods. By the spring of 1922 a nursery had been established at Bogalusa, producing 1,200,000 seedlings the first year. From this time on, planting crews swarmed over the barren wastes until by 1929 the ten-year goal of 23,000 hand-planted acres had been achieved—well ahead of schedule.

Planting continued at Bogalusa until trees—mainly slash, loblolly and longleaf pine—were once again growing on 57,000 acres. And with it developed the necessary protection measures—fire control and fencing against damage by razorback hogs. At the same time, the company tightened its policy of leaving seed trees on land being logged, to insure natural regeneration. In other words, throughout the Great Southern holdings a new forest was in the making. Forestry was on the march!

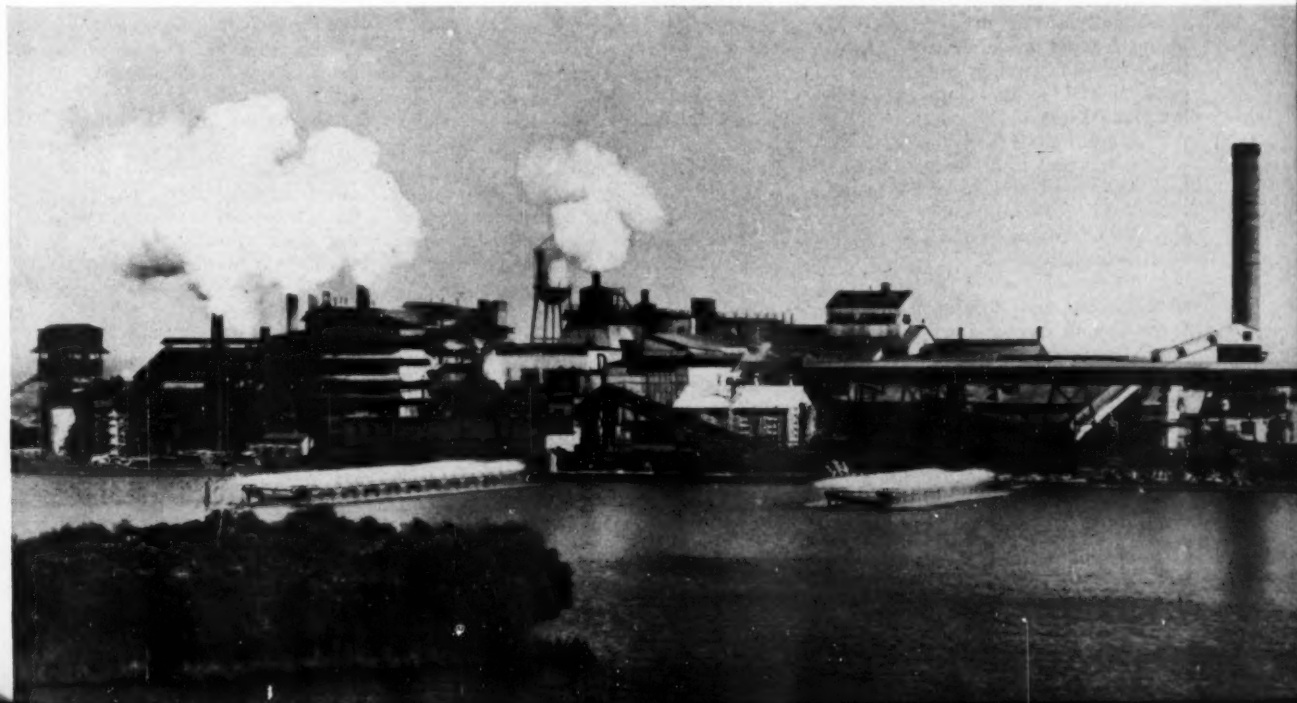
To W. H. Sullivan, Great Southern's general manager and mayor of Bogalusa, and J. K. Johnson, the company's first forester, fell the task of getting the planting job done. "When Bill Sullivan made up his mind," Forester Johnson, now retired, likes to relate, "he would wait for

nothing. I wanted to plant slash pine in that first tract, but we couldn't get enough seed. Mr. Sullivan said plant it—so we did—with loblolly."

This, of course, was not the technique employed throughout the vast program. But it does emphasize the tempo and eagerness which gripped Bogalusa when its chance for permanency came. Actually, the Southern Forest Experiment Station made Bogalusa its planting research center in 1923, with the company's extensive plantations serving as a general observation ground and pilot plant. Out of this combination came much of the technical information that later guided the planting of many millions of pine trees throughout the South by the Civilian Conservation Corps, the operation of various state forest nurseries, much of the routine planting

Pulp and paper mill of the Gaylord Container Corporation, symbol of the new prosperity that has come to Bogalusa because of foresight, good forestry and faith in the land. Its future is assured

Art Studio Photo



of the Soil Conservation Service, and forest planting on thousands of farms from Maryland to Texas.

So significant, in fact, was this great planting laboratory that foresters from all over the world visited Bogalusa for observation and study.

Today these magnificent forests, located within a fifteen-mile radius of the pulpmill at Bogalusa, have attained merchantable size and are being harvested—the first time in the United States, on anything like the present scale, hand-planted forests have attained commercial value. Present cutting began slightly over a year ago, a thinning operation planned by Gaylord's staff of foresters. Since then about 2000 cords of wood have been removed each month—and this volume will be doubled sometime this year. Each acre of the forest will be thinned once every nine or ten years.

Without question one of the finest concentrated large blocks of pulpwood in the nation, the plantation averages around ten cords to the acre, or a total volume of 600 thousand cords. The block in which present thinning operations are concentrated, planted in 1923, averages thirty cords, measured at the four-inch limit of utilization, a net growth considerably in excess of one cord of wood an acre each year. About ten cords are being removed from each acre, leaving for future growth from fifteen to twenty cords. The trees left, selected for their form and vigor, are expected to maintain in the future the rapid growth which they have made in the past.

After the plantation has been thinned a third time—from thirty to fifty years—the forest will reseed itself. When this restocking is complete, the last of the planted trees will be cut, leaving the small natural trees to grow and develop and repeat a cycle similar to that followed with the planted forest. This is the way to permanent forests and forest products, permanent forest industries and permanent communities and payrolls.

And this is the dominant theme of Gaylord's forest policy—permanency of investment and jobs. It applies not only to the planted forest, but also to the 287 thousand acres of natural forest now under management. Based on the principle of multiple use, it calls not only for the production of pulpwood, although this is the primary crop, but for a diversity of products, including sawlogs, poles, piling, crossties and stave material.

"It has been the company's experience," explained Executive Vertrees Young, "that it is impossible to grow

pulpwood without also growing some excellent sawtimber. Modern pulpmills are equipped to convert a log twenty-two inches in diameter into chips—but why use a log of this size for pulpwood purposes when its value is usually so much greater for lumber? Similarly, why cut a straight and perfect seventy-five-foot pine for pulpwood when its value for piling is worth several times its pulpwood value? Gaylord intends to maintain sufficient area of forest land in a high state of productivity to produce sawlogs, poles, pilings and ties in addition to a large percentage of its pulpwood requirements."

This job falls in the lap of an extremely capable forestry department headed by Paul M. Garrison—a department that boasts ten graduate foresters, twice that number of trained woodsmen, mechanical tree planters, a fleet of jeeps, complete equipment for aerial photography, and two-way shortwave radio communication in its fire control organization, including a patrol plane. This is modern forestry, a far cry from Great Southern's J. K. Johnson and his 200-man planting crews.

As outlined by Chief Forester Garrison, his department is responsible for the maintenance of 150 miles of company roads and 600 miles of firelines—and for rainy days, 200 miles of fence. Fire protection is highly mechanized, the department having on call at all times a fleet of fifteen jeeps especially equipped for fighting forest fires. These efficient units work in close harmony with state-owned tractors equipped with water tanks and gasoline power pumps.

Its patrol plane, the first to be used in Louisiana, is in constant touch during its regular flights in fire weather with a system of steel lookout towers and motorized equipment by means of two-way radio.

Management of Gaylord's forest acreage, Mr. Garrison briefed, means taking whatever action is possible to develop maximum tree growth—and this includes planting, thinnings, improvement cuttings, hardwood control and the method selected for harvesting mature timber—and then maintaining a balance between growth and the quantity of timber cut.

Not the least of Gaylord's forestry activities is its policy of encouraging owners of small forest properties to take better care of their timber. Its wood procurement division has three foresters available to assist landowners without cost in marking timber for pulpwood thinnings. It conducts timber-cutting demonstrations, dis-

tributes annually hundreds of thousands of seedlings free to farmers and farm youth groups, and its traveling forestry exhibits are in great demand throughout the state.

Planted pines pay, the men of Gaylord tell these landowners—and they should know. They and their predecessor, the Great Southern Lumber Company, have planted *fifty-one and a quarter million* on their own lands.

"Gaylord believes," says Vertrees Young, "that the future of the South will to a great extent be determined by the future development of its forests. The company believes that potentially the South is the greatest timber-growing section in the world.



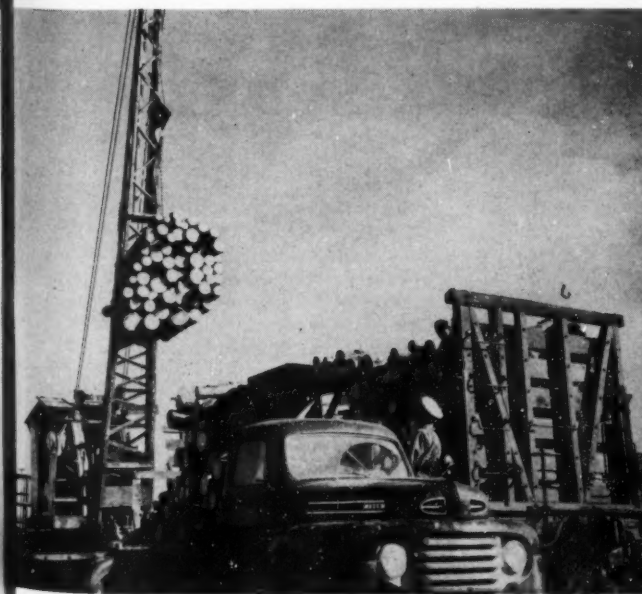
Gaylord has faith in the land—in the development of the South. It will do its share in building up its forests."

This is the kind of thinking—and faith—that stimulated the Goodyears, Bill Sullivan, Jake Johnson and other Great Southern tree planters a quarter of a century ago—men who knowing their mill, the largest in the world, was marked for death, nevertheless planned and labored that their community might live. They proved to the nation not only that large blocks of forest can be planted successfully and profitably, but that any community, dependent upon a forest economy, can permanently prosper when there is vision and faith in the land. Bogalusa stands today as a monument to this truth—and the Gaylord Container Corporation is pledged to keep it green.



MECHANIZED FORESTRY

THE GAYLORD Container Corporation forestry operation is completely mechanized. At left, power equipment in the hands of a trained woodsman makes for higher production. Top left, pulpwood is hauled by Diesel-powered engines. A patrol plane with complete aerial photography equipment (top right) works closely with operators of steel fire towers — all with shortwave radio communications. Right, a tree planter in operation. Lower left, a mechanical loader speeds this formerly backbreaking job. Right, one of Gaylord's fleet of tractors equipped for fighting forest fires.



The Indomitable Finns Rebuild

Thousands of displaced farmers are finding new homes, new land in Finland's resettlement program

By J. A. COPE

IF this country were suddenly required to give up ten percent of its continental area, and move an equal percentage of its population out of the ceded territory, some idea might be gained of the problem facing Finland at the end of the disastrous war with Russia in 1944. The area involved is equivalent to the states of California, Oregon and Washington.

Finland lost approximately seven and a half million acres of its territory and had to find place and room for nearly half a million people. Russia offered to allow the Finns, mostly Karelians, to remain in their homes and on their farms provided they accept Russian rule. But to a man the Karelians refused the offer and appealed to the Finnish Government to find them new homes.

What a task for a government, with financial resources depleted and its manpower decimated by the war, to undertake! Nevertheless, by May, 1945, a Land Acquisition Act had been unanimously passed in Parlia-

ment and the resettlement job was under way. The total population within the ceded territory was 480 thousand of which about half, or 230 thousand, was distinctly agrarian. The government assumed that the remaining quarter of a million, largely from towns and the capital of Kareliia, the historic Viipuri, could and would be absorbed into the industrial life of such cities as Helsinki, Tampere and Kotka. But for the farming population it meant new farms to be developed, new homes to be built.

By late 1945, more than 28,000 dispossessed Karelian farmers had filed claims for new farms. At the same time, the Land Settlement Act made possible the acquisition of land by disabled war veterans and war widows who wished to farm. The act also permitted owners of some 30,000 farms too small for economic operation to acquire additional acreage at a rather low price.

Now, after four years of aggressive activity, the resettlement job is near-

ing completion as far as land acquisition is concerned. In this program government officials made strenuous efforts not to disturb the current agrarian economy any more than necessary. While the law gave authority for the reduction in size of existing large farms to provide new farms for the Karelians, a real effort was made to avoid this procedure when other land could be had.

There are at the present time about 300 thousand operating farms in Finland. Only 20,000, or seven percent, will have surrendered land under the terms of the act. The entire area of central and southern Finland in which the Karelian farmers were relocated was, for purposes of resettlement, divided into as many communes as had been lost to Russia and, temporarily, given the same names. Then all the farmers from a given commune were moved to the new commune. Thus while the land and surroundings were new, they met on every hand their former friends and neighbors.

A little background of Finnish agriculture is necessary to appreciate the enormity of the task facing the Ministry of Agriculture in acquiring sufficient land to satisfy these farming Karelians. Of the total land area of Finland, only thirteen percent is in tillable fields and pastures, whereas productive forests occupy over seventy percent. This meant that new farms must be largely hewn out of the forests, just as our pioneer ancestors east of the Mississippi River did in the early decades of the nineteenth century.

The Resettlement Act provided that land was to be acquired first by voluntary sale and then, if that did not prove sufficient, by compulsory sales. During the four-year period, forty percent of the land needed has been acquired by voluntary sales, sixty by compulsion. Land values on which sales were based were those in effect at the end of 1944—a very depressed value, incidentally, according to landowners who were forced to sell. Furthermore, the law provides a defi-

(Turn to page 36)



A half million acres have been converted from forest to crop land in the resettlement program. Here is a typical land clearing scene



Fennia Kuva Photo

Clearing operations not only are providing the displaced Finns with land for cultivation but with timber for their new homes



Pekka Kyytinen Photo

Volunteer workers from all over Europe are helping the hardy Karelians rebuild. They work forty hours a week without pay



Pekka Kyytinen Photo

During the early stages of resettlement, the crudest kind of shelters were devised for livestock. This is a cow house



Pekka Kyytinen Photo

Many dispossessed Karelians lived underground, too, during the winter of 1945. Others built makeshift shelters such as this



W. R. LaDue with award presented by the Ohio Forestry Association

It Won't Happen in Akron!

By JAMES B. CRAIG

Akron's enviable water system, in striking contrast to New York's plight, spotlights the wisdom of long-range planning—the fact that wise land and water use are part of the same pattern

BACK in the days when practicing conservationists often led unappreciated lives, Wendell R. LaDue, a farsighted engineer, determinedly laid the groundwork for the planned development of a modern municipal water system in Akron, Ohio, that today ranks second to none in the nation.

Twenty-five years ago, Engineer LaDue was one of a handful of conservation pioneers in Ohio who recognized that wise land and water use are inextricably woven together in the same conservation pattern, that you cannot cherish the one and neglect the other.

LaDue was one of the first Ohioans to put this concept to work. As a result, he was practicing soil conservation and forestry on Akron's acres long before the public fully appreciated what he was trying to do. In due course this integrated land use program led him into such interesting sidelines as farming, orchard husbandry, maple sugaring, the sheep and cattle business and fish and wildlife propagation.

It wasn't always easy. The puzzled taxpayers gave him some bad times. When he went fifty miles afield to buy up land to assure Akron's future water preserves, his critics bluntly told him he was loco. When he planted the first of three million trees to help assure the city pure water in sufficient quantity for years to come, the earlier charges were fired at him again. His farming ventures were similarly criticized in the beginning by citizens who couldn't understand a water engineer

who refused to stick to his water.

But criticism did not deter LaDue. Nor did more formidable obstacles. When the City of Akron refused to appropriate money for municipal watershed tree planting, LaDue coolly bootlegged the labor and got on with the job. When unsavory characters, of which Akron had her fair share years ago, tossed burning fagots onto watershed property in an attempt to burn him out, LaDue calmly put out the fires and went on with his work.

Eventually criticism subsided. Em-

ployment given hundreds of needy families on watershed property at the height of the depression (\$250,000 was provided for that purpose) was one helpful factor. The growth of conservation education was another. The example set by LaDue himself as he unswervingly followed the outline of his development program was a factor that gradually won converts to his cause and funds for his tree planting activities.

"We've got to look ahead," LaDue kept preaching in those lonely early

Akron's Mogadore reservoir serves a threefold purpose. It provides the city flood control, recreation and a reserve water supply for industry

photo by Goodyear Aircraft



years. "In the water supply business ten years from now is today."

The truth of these words has an eloquent ring today when Akron's strong municipal water system is stacked up against the current plight of eight million New Yorkers who face a critical water shortage, in greater or less degree, until 1956.

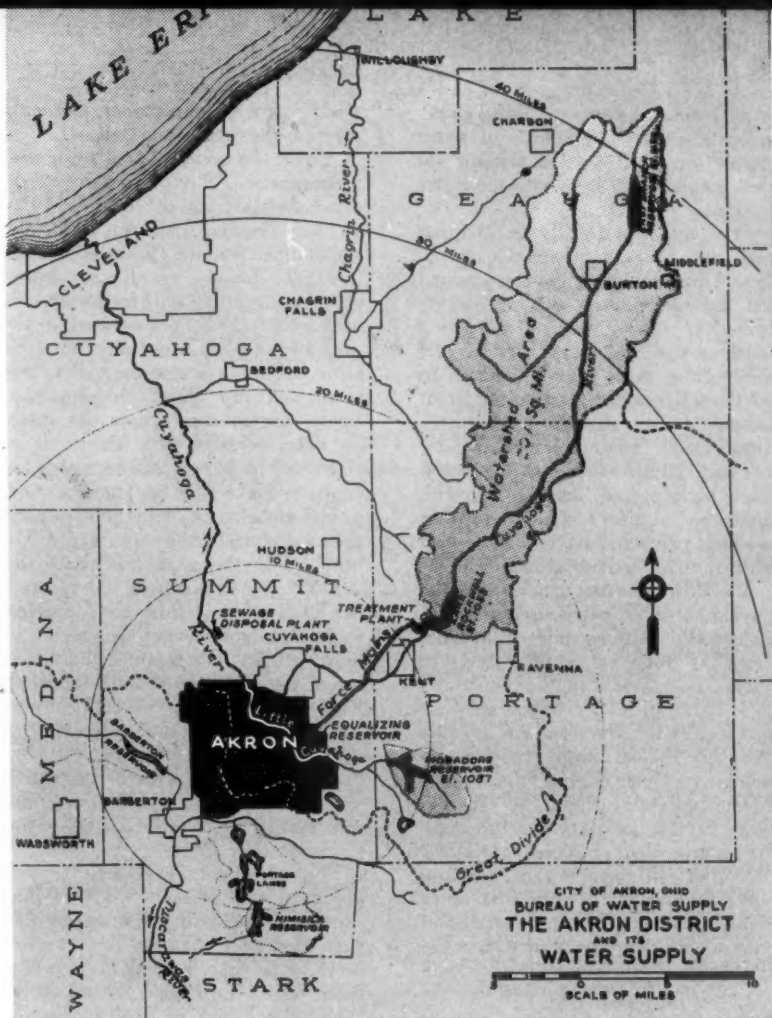
There will be no water shortage in Akron now or in the foreseeable future. Only a third of the water available in Akron's three watersheds stored in three reservoirs at Magadore, Kent and in Geauga County is now required to supply an average thirty-seven million gallons a day (forty-three million in summer months) to this bustling city of over 285,000. The system could easily be expanded to supply a population of a million.

Built at a cost of \$30,000,000, this system has provided many blessings to the city. Fat war contracts for Akron plants were won largely on the strength of this water wealth. The city's fire insurance rates, among the lowest in the nation, are kept that way due to the good equipment and volume and pressure of water provided for the city's 5700 fire hydrants. Typhoid fever has been practically unknown in Akron for over ten years.

"Foresighted planning in the past, when the reservoirs were built, and reduction of wastage, have combined to relieve Akronites of the danger of facing a water shortage such as besets New York," Associate Editor Jim Jackson, of the *Akron Beacon Journal*, commented editorially on December 13 following a check up on water supply in his community. His comment was of interest not only to Akronites but to people everywhere.

"Everywhere?" you might ask. Consider that half the world's production of rubber is fabricated into 32,000 different items in this Ohio city. Detroit's automobiles are shod in Akron, with Goodyear alone turning out 111,000 tires a day. The clothing people wear and the equipment they use—including tractors, washing machines and baby carriages—all contain rubber items with Akron's stamp on them that are used daily in the entire civilized world. And when you go to the hospital your doctor depends on a long list of rubber implements that may help save your life.

The impact of this city on the world has been great. And water has played an important part. Editor Jackson, after making his survey of Akron water, was fortunate in being



Akron sits like a saddle on the Great Divide which means water runs away from it on both sides. This presented some interesting problems

able to slug his editorial, "It Won't Happen in Akron." Newsmen in other cities who made similar checks weren't all able to say the same. Too many cities are just getting by. A few aren't even in that category. Eventually the score of these less fortunate cities—the ones with water systems that don't measure up to present-day demands—will be tabulated in terms of increased fire losses, more disease, and in terms of new industries that looked the situation over and decided to settle some place else—some place where water engineers had planned ten years ahead.

Water is all-important to the life of any city. But until fairly recently people paid scant attention to their water departments. One hopeful by-product of New York's plight has been a wave of water consciousness that has suddenly gripped urbanites all over the country. That is why turning the spotlight on the benefits derived from this Akron water sys-

tem may prove helpful now.

Prior to 1900, Akron had been a rather ordinary sort of town. A center of the cereal and reaper business, it attained in due course a population of 69,000. Rubber, in those days, had something to do with a "horseless carriage" that had appeared on Detroit streets for the first time and a trotting horse, Nancy Hanks, that had lowered the record of the famous Maude S by four seconds while drawing a sulky on newfangled pneumatic tires. A few men in Akron—they had names like Goodrich, Firestone, Seiberling and Swinehart—were keenly interested in these developments and were experimenting with rubber. But few people were greatly concerned.

Water was a problem in those days, not particularly for industry, but because of domestic shortcomings. Small fish and pollywogs had been discovered in drinking water not once but on numerous occasions. When the

private holding company failed to develop a satisfactory source of water supply the city, in 1912, bought out the company and went into the water business.

City engineers quickly learned that they faced some interesting problems. Upon receding, the glaciers had left the Akron area sitting "on the fence." Actually, the city sits like a saddle astride the Great Divide. Its water flows away from it—south to the Ohio River and north to the Great Lakes. Local adjacent watersheds were small. Their volume of water was not large. But the pre-glacial river valleys had been filled with some good aquifers—sand and gravel—which private industry had tapped with wells for industrial use.

A child of the last glacier was the Cuyahoga River which rises in north-eastern Ohio, fifteen miles from Lake Erie. It flows south fifty miles to Akron, describes a big U, and flows back north to empty into Lake Erie at Cleveland. Development of this horseshoe-shaped river was recommended by water engineers at a point fifteen miles northeast of Akron, above which the river had accumulated a watershed of 206 square miles.

Against odds, engineering wisdom prevailed and in 1915 the first water of the Cuyahoga was treated and pumped into Akron. And just in the nick of time, too. For by 1915 Akron was stirring itself, was well on the way to becoming the rubber capital of the world. Early experiments in rubber had borne fruit. New techniques had been perfected. And an

electric air of expectancy suddenly gripped the whole population.

Akron was soon a boom town with a vengeance. Thirty thousand workers converged on the city in 1916. In one decade, 1910 to 1920, the population jumped from 69,000 to 209,000. Labor recruiters chased south to comb the hills for husky lads and herded them back to work in the gum shops. Soon the city burst its bounds, sprang across the valley, and swallowed up rival communities. Space was at a premium. As many as nine workers slept in a room. Chickens were evicted from their coops to make way for humans.

The physical city tried to keep pace with this maelstrom but lagged behind. For the next few years the young water department was to exert the bulk of its effort to supplying more and more water for more and more people. In tapping the Cuyahoga, the department had launched itself upon a career of land ownership. But the planned development of these holdings—starting with approximately 1750 acres of protective shoreline around Lake Rockwell, the impounding reservoir—was not to begin until after 1922.

The turbulent, explosive atmosphere of this miracle town at that time and for years afterwards was such that one wonders how a conservationist like LaDue even got a foothold in the municipal structure. While the vision of the captains of rubber was one of the marvels of the new automotive age, the vision of the average Johnny-Come-Lately was to

"make his pile and go home." The town was money mad. Young couples made as much as \$900 a month, the husband holding down two jobs under different names, the wife taking in boarders. Few people were greatly interested in any planning for the future or in long-range tree planting programs. One bluff ward heeler who found himself elevated to public office put his finger on the popular pulse when he exclaimed, "Trees, trees—who the hell wants to plant trees?"

The answer is, of course, that LaDue did. The first planting of any consequence was made in the spring of 1922 at Lake Rockwell. Mixed pines were planted. Bootleg labor was used. The job has been going on ever since. Today hundreds of thousands of flourishing trees are one of the chief ornaments of not one but three municipal reservoir areas totaling 13,500 acres, each with its own nursery.

The initial effort at Rockwell—which officially launched the land-use phase of this system's development—was to check erosion on the shoreline property around the impounding reservoir. In due course the shoreline was laced with a protective array of Norway and blue spruce seedlings and Scotch, Austrian, red and native white pine. Behind them was a variety of hardwoods including walnuts, tulips, oaks, maples and locusts.

LaDue's early forestry was self-taught. Much of what he learned was through experimentation. Larch, he discovered, worked well in slightly moist areas. Locusts and honeysuckles were hardy and especially effective for erosion control. The evergreens proved most suitable as a ground builder and for providing ground cover. Where woods existed, LaDue found it advisable to keep deciduous leaves out of the water for purposes of color control. For this reason, dense screens of evergreens were planted along the shoreline between the deciduous growth and the water. These trapped the leaves and kept the water clear.

While restoration of forest cover posed the biggest single job on the watershed, LaDue found that he must be prepared to turn his hand to a number of endeavors if all-out land use effectiveness was to be achieved. Purchase of a fifty-acre fruit farm adjacent to Rockwell was one such protective measure. To protect this investment the water department decided to go into the fruit business. Other adjacent former crop areas

(Turn to page 40)

Akron, a city that has water to spare, can impound 2,200,000,000 gallons at Lake Rockwell before it spills over the dam shown above

Julius Greenfield, Akron Beacon Journal





An old hand at the business tests gravity of hot syrup

THE people of Chardon, Ohio, believe in having fun while they work. In the spring when the sap begins to flow from the surrounding maple forests, this busy little town of 2000, twenty-eight miles northeast of Cleveland, buzzes with activity. It's time for boiling sap down into rich maple syrup—and it's time for the annual maple festival which lures around 140,000 visitors.

Plans are already well advanced to entertain the throngs who will flock to Chardon and its nearby maple forests of Geauga County March 31 to April 2, for the twenty-fifth annual festival.

It all began with the hardy New Englanders who settled in this section more than a century ago and brought with them the know-how of tapping maple trees and boiling the sap into syrup.

When the sap run starts, men in the maple camps set a day and night watch over the steaming evaporators. To break the monotony of these lonely vigils, young people got in the habit of making nightly treks to the sugar camps. They would bring along eggs and dressed chickens and drop them into the hot sap to cook. Then music and laughter would ring through the camps.

This custom struck a responsive chord in Arthur B. Carlson, Chardon merchant. Why not tap the maple trees in the town park across the street and invite the people to view and compare ancient and modern methods of making syrup? Despite some skepticism, Carlson recruited a faithful band of citizens to help him launch the project.

That was in 1926. Five thousand

visitors showed up, more than had been anticipated.

Now a maple festival board, comprising twenty-eight committees and 300 members, runs the show. All contribute their services, while profits arising from the sale of maple products and concession space are used to make succeeding festivals more successful.

The board seeks to keep the setting purely in the realm of Mother Nature. Maple camps of the days of the early settlers are reproduced and operated in the park. At night glowing fires under the steaming sap make a pretty sight on the village green. Much in evidence is the big, iron kettle which was used long before the modern evaporator was devised. A

piece of pork hangs suspended over the boiling kettle.

"Might just as well not make maple syrup if you haven't got a piece of salt pork over the kettle," old-timers say. When the sap begins to boil over it hits the salt pork and goes right back to the business of making syrup.

Contests highlight the festivals. There is sap gathering, tree tapping, rail and log chopping and bait casting. Maple producers compete for prizes. Spinning wheels, dishes, old clocks, watches and guns are displayed. Chardon women don authentic clothes of by-gone days and present a style show.

Yes, it's a gay time in Chardon when the sap "run" is on.

This throng on Chardon's village green represents a part of the 140,000 people lured to this maple festival every springtime





FLOODING PETER TO SAVE PAUL

By J. N. "Ding" Darling

Mirage of River Basin Development

An examination of federal projects that have failed to solve our river basin problems points to the urgency of rising above the pressures of vested bureaucratic interests in putting future resource planning on a sound, realistic basis

By BERNARD FRANK and ANTHONY NETBOY

THE fact that the development of our river basins and rehabilitation of our damaged watersheds have proceeded in an uncoordinated, piecemeal manner was exposed by the President of the United States in his message to Congress of April 14, 1949.

"A great deal needs to be done," he said, "to bring the land, forest and mineral activities of the federal government into step with the water development program. It is a questionable economy to spend millions of dollars on dams as part of a flood control scheme, unless at the same time we are doing all we can in the way of forest and soil conservation and rehabilitation, so that floods will be minimized rather than aggravated. Similarly, it is not sensible to spend millions of dollars to reclaim land, in order to create new farms, if at the same time we fail to take the appropriate steps to save existing farm lands from being washed into rivers.

"It is obvious," he concluded, "that federal activities and expenditures concerning land resources need to be planned in relation to those concerning water resources."

The President's statement was made in support of his proposal to create a Columbia Valley Administration in the Pacific Northwest—a dream project considering the mood of the Eighty-first Congress.

Up to now, no overall plan has been in evidence on any major river basin. With minor exceptions, no systematic work on the watersheds has yet been undertaken—not even in the Tennessee River basin. Federal activities on the rivers—which comprise by far the main programs—have been marked by bitter inter-agency rivalry and bureaucratic usurpation of authority. Although billions of dollars have been spent on flood control, navigation, hydroelectric and reclamation developments, an appreciable portion of the investment, as observed in an earlier article, is doomed to be wasted. Moreover, while downstream problems have received assiduous attention, upstream watershed difficulties have been largely neglected.

I

Sixteen years before, the concept of river basin development was clearly formulated in the mandate vested by Congress in the Tennessee Valley Authority, namely, "to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; (and) to provide for the agricultural and industrial development of said valley." Here was launched a unique, basin-wide multipurpose experiment which would be



The need in resource planning today is to do the job that needs to be done on the land

a model for other regions of the United States.

"If we are successful here," said President Franklin D. Roosevelt in his original message to Congress calling for a TVA, "we can march on, step by step, in a like development of other great natural territorial units within our borders."

Let us see precisely to what extent these high hopes have been fulfilled in the intervening years.

River development is perhaps the most phenomenal and widely publicized of TVA's accomplishments. It is certainly the only one which has so far most fully justified the hopes of its original planners.

Like the Mississippi, the Tennessee before the advent of TVA was often a mad, reckless stream. Between the latter part of December and the first of April, when heavy and prolonged

In their concluding article on the dangers inherent in piecemeal planning in solving our land and water problems, the writers point up the shortcomings of the big valley authorities, recommend that planners look at land use problems in their totality

rainfall often soaked the soil mantle to capacity, the river would become a swirling torrent, inspiring fear and trembling in those who lived too near its banks. When the flows rushed down from the poorly protected headwaters, urban river fronts were often inundated, transportation arteries became unusable. Farmers dared not plant their crops too close to the shore and cities built higher and higher levees in the hope—sometimes forlorn—that they could purchase safety against the floods.

Just as the river would spill over its banks in many places during the period of heavy rainfall, so in the drier season its flow might dwindle down to nothingness. Navigation became impossible and the head of power inadequate.

The TVA water control system, consisting of nine mainstream dams

and seventeen tributary reservoirs, has remedied all that. Never has a river been more securely tamed—albeit mainly by flooding out several hundred thousand acres of productive land that lay along its floodplains.

The operation of the dams is nicely articulated to even the flow of the Tennessee River and protect the most vulnerable places. At the beginning of the flood season, more than eleven million acre-feet of reservoir space is available for the storage of flood waters. When a critical situation arises in any locality, the proper dams are closed and the reservoirs are used to withhold sufficient water to reduce the flood crest and regulate the flow past the danger spots. When the flood season is over, the reservoirs are allowed to fill up so that water will be available for release during

the drier period. Even then, four million acre-feet of flood storage space is held in reserve.

The TVA system of dams and reservoirs has not only reduced flood damages at Chattanooga but has also lowered flood crests on the lower Ohio and the Mississippi, and thus avoided losses to crops and property estimated at many millions of dollars annually.

II

In addition to controlling floods the TVA system of dams has brought two other immense boons to the people of the valley—cheap power and an inland waterway system navigable for 630 miles.

Along the river now there is considerable commercial traffic, whereas seventeen years ago little was to be seen. Barges laden with automobiles, fertilizer, metal ores, aluminum, grain, iron and steel, and other products glide through the locks. In 1948, three million tons of freight flowed up and down the river, three times as much as in 1933. Ton-mileage, which reflects the length of the haul as well as tonnage, was thirteen times the 1933 figure.

The acquisition of 1,100,000 acres of land to provide reservoir space, of which 300,000 acres are subject to flooding, has created a score of lakes in a naturally lakeless region. Nine thousand miles of shoreline are available for recreation, with 16,500 acres on reservoir properties devoted to public parks.

Some 280 thousand farms are now electrified in the valley—two out of every three—compared with one in twenty-eight in 1933. Rural electrification has been paralleled by a tremendous increase in the use of power in cities. The average consumer is using about three times as much electricity as fifteen years ago. And cheap power has encouraged the coming into the valley of many new industries, including a half-billion dollar atomic energy plant at Oak Ridge, Tennessee.

III

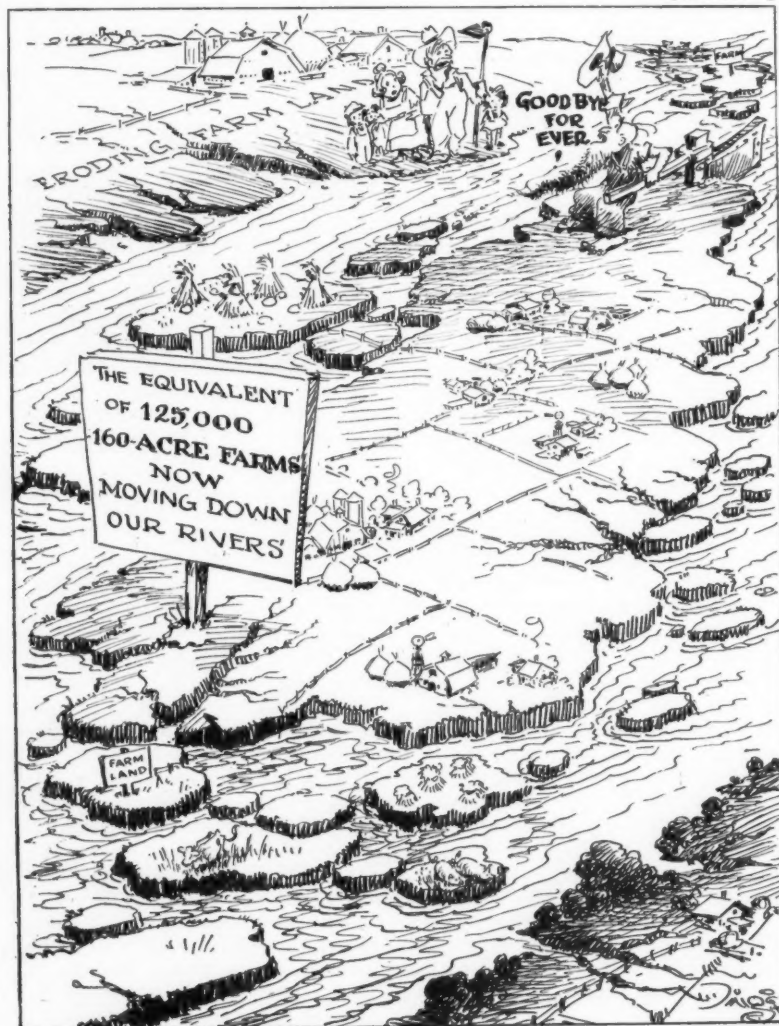
TVA's greatest achievements are primarily in connection with river development. Watershed development has hardly begun. Indeed, TVA has paid far too little attention to problems of watershed management *per se* and to watershed studies—fields which provide the opportunity for its most important contributions.

While the main river and the major tributaries have been controlled, the

(Turn to page 42)

WHAT THAT MUD IN OUR RIVERS ADDS UP TO EACH YEAR

By J. N. Darling



Planting Prospects in 1950



TREE planting in 1950 may eclipse all previous records.

There are several sound reasons for this belief. Nurseries for the first time since the war are in a position to provide stock in quantity. Eighty-three state nurseries expect production this year to hit a peak of 470 million seedlings.

More important, there is general recognition by landowners everywhere that tree planting pays off—a new concept entirely divorced from the old notion that the planting of trees is a civic duty or a project that seldom results in tangible benefits to the planter.

In addition to the availability of trees and a willingness to plant them on the part of landowners, there is another plus sign that favors a new record in 1950. That is the liberalization by Congress of the Clarke-McNary Act by the adoption of the Granger Bill.

Until this year, only farmers could benefit under the Act from federal matching funds for carrying out tree-planting projects. And the benefits realized by farmers was not large since not more than \$100,000 a year was authorized for this purpose.

Adoption of the Granger Bill has increased the scope of this aid. This year these benefits are available to anyone who is willing to plant trees under the three-way landowner, state and federal setup. Congress has also removed the \$100,000 restriction and hiked this year's appropriation to \$250,000. Next year, if the Budget Bureau's figure is adopted, this aid will be increased to \$1,100,000.

This should give tree planting new impetus, especially in states where the planting effort has been small. For instance, a state now spending several thousand dollars a year for

planting can obtain a total of \$20,000 by upping its effort to \$10,000—with the government matching its effort.

States with large planting programs, like New York and Pennsylvania, also stand to profit as a result of the liberalization of the Clarke-McNary Act. Due to the "farmer only" restriction, plus the fact that the federal appropriation was not large, states with \$150,000 planting programs formerly received as little as \$4300. In many cases, participation in these state programs was eighty percent non-farmer.

By increasing matching funds and removing the "farmer only" restriction, Congress indicates it is now alert to the need for increased planting activity in the nation. The aid for such programs will probably gradually increase until the planting goal of "a million acres a year" is realized.

Meanwhile, the U. S. Forest Service is preparing to launch a major reforestation effort under the Anderson-Mansfield authorization. Set up as a fifteen-year project, it calls for the planting of approximately four million denuded and unsatisfactorily stocked acres in national forests. The total job will cost around \$110,000,000, based on present prices. Plans for 1950 call for an expenditure of around \$3,000,000, and the effort will increase year by year.

Another major effort is getting under way in Oregon's Tillamook area where 460,000 burned over acres are slated to be reseeded and replanted at an estimated cost of \$10,000,000.

A total of 348,000 acres were planted to trees in the United States last year, according to the *Summary of Forest Planting in the United States* compiled by the U. S. Forest Service on the basis of data supplied

by state foresters. As broken down in the report, federal planting on federal land was 59,000 acres, planting by state and other public agencies on other public lands, 23,000 acres, and planting by private landowners and industry on private lands, 266,000 acres.

These figures closely parallel those of the previous year when federal planting was reported as 54,000 acres, other public planting 23,000 acres, and private planting 274,000 acres—a total of 351,000 acres.

This summary may be conservative in some respects, state and federal foresters admit. Planting figures on public lands are exact, but private planting figures represent "informed guesses" in some instances due to lack of proper "poll taking" machinery.

Production figures of eighty-three state nurseries would indicate a somewhat greater increase in private planting last year than the summary figures show. These nurseries set their production last year at 356 million trees compared to 239 million the year before. The output of the forest industries Nisqually Nursery in the State of Washington, alone last year was 6,708,000 trees, compared to 4,841,705 the previous year.

According to the summary—the only yardstick available at the moment for measuring private planting—farmers planted 123,000 acres last year. Other small landowners, including clubs, associations and privately-owned schools and colleges, planted 26,725 acres. Total acreage planted by the forest industries—pulp and paper, lumber and plywood companies and naval stores—is set at 107,000. Other industries, including mining, railroad and water and power companies, planted 8,845 acres.

Super Race of Douglasfir

By ALBERT ARNST

FORESTERS in the Douglasfir region of western Oregon and Washington have chalked up another national first in industrial tree farming.

Ranking in importance with the tree farm and Keep America Green programs, both of which were first promoted in the Douglasfir region, is the announcement that a "super race" of Douglasfir trees is in the making for West Coast forests. The techniques, applicable to other forest regions, some day may well be standard procedure in tree growing.

The new look in tree seed is a certified record which guarantees that both mama and papa trees were citizens of good standing in forestry circles. This Kinsey report includes such personal items as species of tree, last known place of residence by locality and altitude, and form factors and related data of peculiar interest to foresters who want no mongrel stock in propagating tomorrow's forests. "Like father, like son" isn't good business for sawlog progeny if papa was a "wolf" tree living on the wrong side of the mountain.

This region-wide program of seed certification for assuring superior trees from artificial reforestation was announced by W. D. Hagenstein, chief forester of the industry's forest conservation committee.

Under the plan the forest industries tree nursery at Nisqually, Washington, which produces seedlings for planting throughout the Douglasfir region, hereafter will use only certified seed.

Each company receiving trees from the nursery will supply its own seed, paying attention to place collected, elevation, form of parent trees, local climate and proximity to area needing artificial reforestation.

All this is possible because growing trees on over three million acres of Douglasfir tree farms has become a scientific business. Nature's prolific seeding program, which successfully and cheaply reforests ninety percent of the region's harvested forest lands, is getting a big boost through the cooperative efforts of private timberland owners, state foresters and federal agencies. Their common objective is more industrial pay-

rolls from perpetual forests.

Last year, for instance, helicopters and airplanes soared over 9500 acres of forest land in road-shy back country. From their bulging hoppers fluttered thousands of little seeds, especially pelleted to ward off predacious rodents and birds eager for a "welfare-state" free lunch. These vitamin-packed pellets also give roots of germinated seedlings a rousing sendoff for their first year of unsheltered growth.

The Nisqually nursery last year produced about seven million seedlings for privately owned tree farms. This output was enough to plant 12,700 acres of idle forest land, and was contracted in advance by timber companies with long-range reforestation programs. Another 1,500,000 seedlings were furnished to the Oregon State Forestry Department for use in rehabilitating the Tillamook burn (see AMERICAN FORESTS for December 1949).

These one-year-old junior sawlogs, mostly Douglasfir with some Port Orford cedar, soon found permanent homes. From November to April,

Douglasfir cones, on first step of journey through seed extraction plant at Shelton, Washington, are dumped into the drum of thresher

Tumbled about, they shed their seed, which move on to dewinger



backbending crews of tree planters methodically set out about 900 youngsters an acre on land robbed of nature's seed sources by fire.

These expanded programs of reforestation require prodigious amounts of tree seed. It takes about a half pound of Douglasfir seed, containing 20,000 seeds, to broadcast one acre by airplane or helicopter. To obtain 1000 usable one-year-old Douglasfir nursery seedlings requires about 4000 seeds. Amount of seed for other forest species varies according to size. Multiply these amounts by the thousands of acres reforested yearly and the amounts approach national budget figures.

This seed must now have a past—not necessarily colorful. Tree farmers are getting fussy about another tree—the family tree of seed used for reforestation. Stimulated by the research efforts of eminent silviculturists such as Leo A. Isaac of the U. S. Forest Service, who recently authored a book on the subject, foresters now realize that a 100-year investment in tree growth can't be jeopardized because of poor seed parentage.

This fall, on the South Olympic Tree Farm thirty-five miles west of Shelton, Washington, industrial foresters took a major step which will guarantee a certified source of tree seed. Proud as a father, Manager Oscar Levin informally dedicated a new seed extraction plant, one of the comparatively few in the Northwest. Designed by Simpson Logging Company engineers, the twenty-four-hour a day "tree factory" is located near that company's Camp Gridale.

In the joint venture several timber

To grow superior trees for their future forests, industries of the Pacific Northwest launch new seed certification plan

companies are pooling their interests by supplying cones for threshing. Included are Crown Zellerbach Corporation, Weyerhaeuser Timber Company, St. Paul and Tacoma Lumber Company, and Simpson Logging Company.

Through summer months foresters from these companies watch maturing cone crops, which for most conifers like Douglasfir ripen in the early fall. They know that bumper yields of quantity and quality occur only about every six years. So when nature starts bedecking her tree tribe with pendant and upright cones, foresters join the squirrels in determining where the best gathering areas will be. The idea is to obtain cones from growing sites matching in altitude and condition the areas to be reforested, and to select seed parents of sound body and approved form.

At gathering time crews scour the woods to glean the cone crop. The harvest must be made before the cones open and shed their seeds wantonly. Squirrels give foresters a cue because of their inherent ability to judge seed ripeness.

Cones are garnered from trees thirty years old and over. Big firs being logged bring crowns within easy cone-picking distance. Other cones are raked or cut off branches. Squirrel caches may supply a part of the crop. There's good money in picking cones, too. A two-bushel gunny sack of Douglasfir brought about \$2.50 this past year, while the smaller hemlock and cedar commanded \$6 a sack.

Assistant Forester Bill Looney, who has charge of extraction plant operation, says that 5000 bushels of cones were brought in this year—more than 4000 bushels Douglasfir, the backbone of the Northwest's forest industry.

Cones are stored in sacks and shallow bins in two long sheds with an open side. Here they are cured before entering the extraction plant—a process that requires two weeks or longer.

To coax the seeds from the closed-up cones, Looney's staff must "turn on the heat." The trick is done in two small dry kilns, in which temperature and moisture can be controlled. The cones are loaded on kiln cars, each of which has a tier of ten sliding screen-bottomed trays. A tray holds about a bushel of Douglasfir cones or a half-bushel of hemlock cones.

Each drying kiln, ten feet long, six feet wide and eight feet high, accommodates two kiln cars. The kiln is heated by six fifty-foot lengths of soil cable strung along the side walls about halfway up. A temperature of between 100 and 110 degrees Fahrenheit is maintained for seven to twelve hours for Douglasfir and twelve to

(Turn to page 34)

Here revolving brushes operating against wire screens remove wings

Dewinged seed are then dumped into hopper of fanning mill, where blower removes final bits of chaff and other foreign material







1950 EXPEDITIONS

TRAIL RIDERS OF THE WILDERNESS

It will be "boots and saddle" again in 1950—the eighteenth consecutive year—for The American Forestry Association's Trail Riders of the Wilderness. Twelve trips, including a pioneer expedition to the famous Wallowa Wilderness of eastern Oregon, are being organized.

GREAT SMOKY MOUNTAINS WILDERNESS—Great Smoky Mountains National Park, North Carolina and Tennessee. Two 12-day expeditions—June 13 to 24 and September 19 to 30. Approximate cost, \$185.

FLATHEAD-SUN RIVER WILDERNESS—Flathead, Lolo and Lewis and Clark National Forests, Montana. Two 12-day expeditions—July 5 to 16 and July 16 to 27. Approximate cost, \$175.

QUETICO-SUPERIOR WILDERNESS—Superior National Forest, Minnesota. One 12-day expedition by canoe—July 11 to 20 (subject to slight change). Approximate cost, \$165.

SAWTOOTH WILDERNESS—Sawtooth and Boise National Forests, Idaho. Two 11-day expeditions—July 18 to 28 and August 1 to 11. Approximate cost, \$180.

MAROON BELLS-SNOWMASS WILDERNESS—White River National Forest, Colorado. Two 13-day expeditions—August 2 to 14 and August 17 to 29. Approximate cost, \$188.

CASCADE CREST WILDERNESS—Snoqualmie National Forest, Washington. One 13-day expedition—August 14 to 26 (subject to slight change). Approximate cost, \$188.

WALLOWA WILDERNESS—Wallowa National Forest, Oregon. One 13-day expedition (pioneer)—August 1 to August 13. Approximate cost, \$200.

PECOS WILDERNESS—Santa Fe National Forest, New Mexico. One 12-day expedition—August 30 to September 10. Approximate cost, \$206.

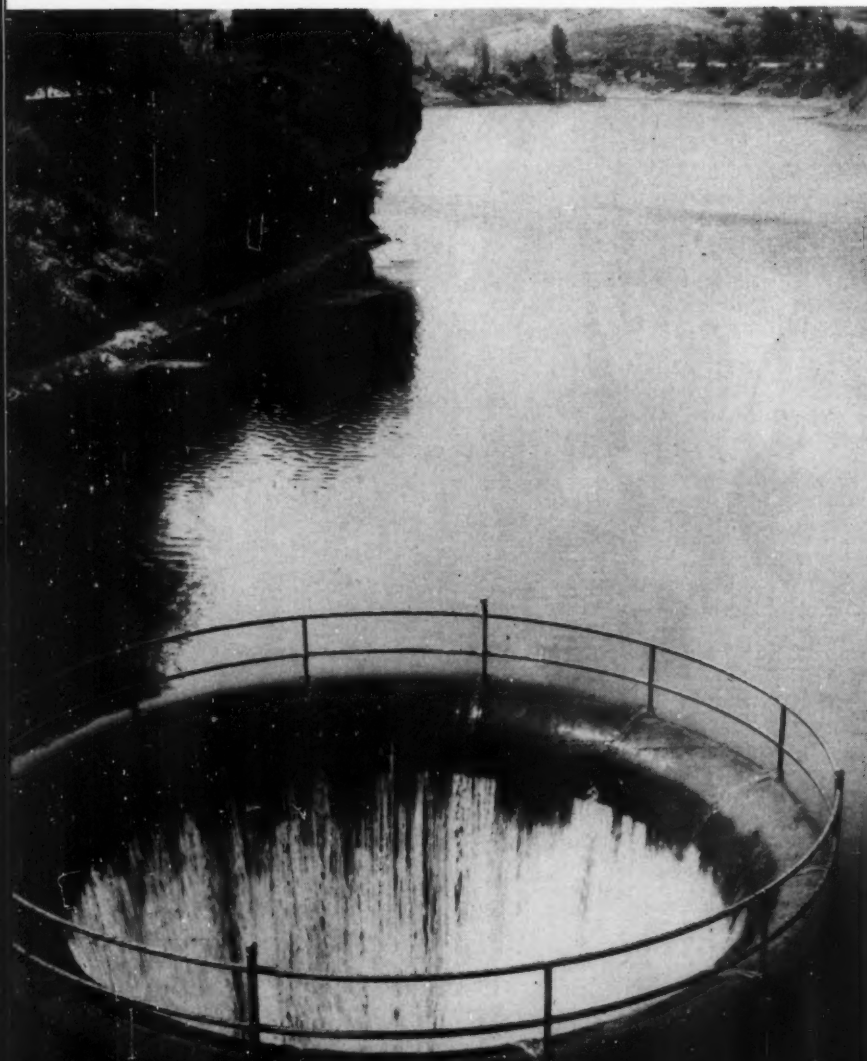
Write now for itineraries and other detailed information

THE AMERICAN FORESTRY ASSOCIATION
919 17th St., N. W. Washington 6, D. C.

Water and the City of the Angels

Back in 1913 the Owens River Aqueduct was hailed as the solution to Los Angeles' water problems. But in less than two decades the city was spending millions to tap the Colorado River — for water it may never get

By W. S. ROSECRANS



In the February issue, Mr. Rosecrans traced the history of Los Angeles' water problem from De Neve's famous Reglamento of 1781 to the building of the Owens River Aqueduct in 1913, hailed as the solution to the city's expanding water needs. But then, few at that time could foresee the tremendous industrial and population growth ahead for Southern California and the necessity, in 1931, to embark upon the bold and expensive project of importing water from the Colorado River. Mr. Rosecrans, chairman of the California State Board of Forestry and former president of The American Forestry Association, completes his two-part series with this graphic account of the project—and the serious problems of water rights that have since developed.

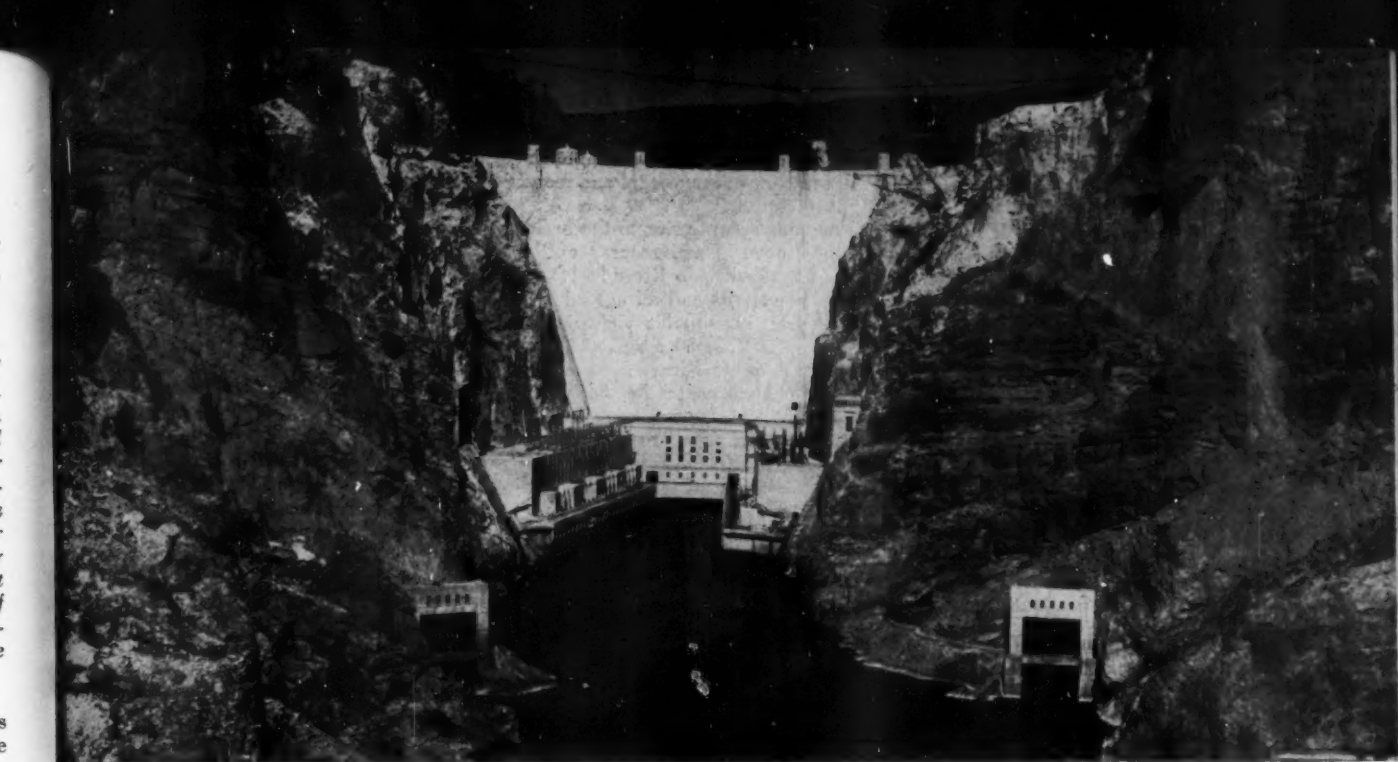
BEGINNING in the early years of the twentieth century there developed a gradual appreciation of the value of the mountain watersheds and the need of maintaining the tree and brush cover. The torrential character of the rainfall and the steep terrain of most of the mountain areas creates a threat of dangerous and costly erosion on denuded land following fire. The recognized depletion of the underground water added impetus to the development of watershed protection.

This has been so organized and perfected by the county, state and federal fire-fighting agencies in their respective jurisdictions that southern California mountains today have the most intensive and costly protection provided for any forest area in the United States. That such rocky and sparsely covered mountains, with few trees, justify such expensive protection is striking testimony of the high value of water in an arid country. These brush forests, with scattered tree areas, do in fact have a greater economic value than the most heavily timbered forests.

Contemporaneously there has developed another important water conservation project, artificial water spreading. Natural replenishments of the underground stored water was accomplished by water flowing out from the mountains and spreading over wide areas of porous sands

Hollywood Reservoir—part of the great system now supplying daily water needs of more than five million people in Southern California

Photo courtesy Department of Water and Power, City of Los Angeles



To bring water from the Colorado River to the Los Angeles area, Californians financed Hoover Dam and built a 242-mile aqueduct capable of providing a billion gallons a day. The burning question now is—will they get it?

and gravels. Soaking down through these absorbent areas, it gradually reached the subterranean water strata. Before the advent of civilization the streams and rivers of southern California had few permanent beds but meandered through the valleys, frequently changing their courses. These also made their contribution to the underground waters.

Natural conditions are now greatly changed. Gradually, agricultural and urban development has fixed stream beds. Highway building, hard surfaced areas and hundreds of thousands of roofs have accelerated runoff. Thus, as water has become more and more necessary and as the underground waters have become depleted, natural replenishment has become considerably impaired.

Because of this situation, spreading areas have been artificially developed near many of the mountains. Flood waters, except for peak flows that carry heavy amounts of silt, are spread over these areas through especially constructed weirs and ditches. This type of water conservation is making substantial increases in the replenishment of the underground stored waters.

The Great Depression hit the United States with tremendous and cumulative impact, an economic epidemic with failures, unemployment and discouragement. It struck southern California with devastating intensity. In addition, the state was

flooded with unemployed from all parts of the nation, numbering into the hundreds of thousands.

Most communities throughout the nation were stagnated and discouraged. Not, however, southern California. It recognized that in ten years it would need additional water, so a great project to import water from the Colorado River was successfully launched. Incidentally, there would be created a vast power source needed for the growing requirements of industry.

Neighboring cities joined Los Angeles in forming the Metropolitan Water District of Southern California. The project was carefully studied and approved by experts in engineering and finance. It was enthusiastically endorsed by popular vote authorizing the issuance and sale of \$220,000,000 in bonds. In addition, southern California pledged itself to buy all the power that was to be produced.

This would make it possible for the federal government to be completely reimbursed for the cost of what was to be the world's biggest dam and receive full interest at four percent—later reduced to three. The federal government did not contribute any money either for the construction of Hoover Dam or for the new aqueduct. Interest has been paid continuously and on time since funds were first advanced by the Department of the Interior, and all payments

of principal are made on schedule.

Most readers will recognize that this self-liquidating federal project presents a very striking contrast to paternalistic projects such as the TVA, Bonneville, Grande Coulee, etc.

The Colorado River project was a very large enterprise for southern California even if times had been good. At such a period it required great fortitude. In the spring of 1931, a representative group of prominent citizens and state and federal officials assembled at what was to be Boulder City. They were taken down the Colorado in boats to view the steep and narrow gorge and the dam site which was marked with fluttering strips of cheesecloth.

Ground was broken in 1931 for what was to be the world's greatest mass of solid concrete. It was to be so large that hundreds of miles of pipes would have to be installed in the dam so that ammonia could be circulated to cool and cure the mass. Otherwise, scientists had estimated, it would take almost two hundred years for the concrete to cool!

An idea of the magnitude of the undertaking is gained when it is realized that it took the combined resources of the six largest construction companies on the Pacific Coast to satisfy the federal government that the dam could and would be built. These contractors pooled their resources in men, equipment and money, formed a new company called

Six Companies, Inc., and signed a contract pledging their entire worth that they could and would complete Hoover Dam. History well records that all obstacles were successfully overcome and the project completed on schedule.

Southern California took justifiable pride in the completion of the great project started during the bleakest period of the Great Depression. Through its efforts, the then greatest dam was built, and a splendid aqueduct completed, with pumps, tunnels, and covered conduit over 242 miles in length capable of lifting water 1617 feet, with a capacity of 1655 second feet, or approximately one billion gallons a day.

Here, obviously, was a far greater supply than would be immediately needed. It was recognized that the

ing principles, they may have failed. They may never be able to get the water they have every legal and moral right to expect.

For many years prior to the building of Hoover Dam, records of the flow of the Colorado River had been kept. The experts had all agreed that the safe net dependable yield of the river was 16,270,000 acre feet. Under the Colorado River Compact between the seven states bordering on the river, the water was divided 7,500,000 acre feet to the upper states and 8,770,000 acre feet to the lower states. All of the states signed this contract except Arizona. Subsequent data, however, on the flow of the river since 1930—including a dry series of years—indicates that the safe yield for the lower basin states was overestimated by 200,000

plus water. As this was an international treaty it would take priority over rights of our several states. In addition, the water granted to Mexico would come from the allowance of the lower basin states.

California and Nevada unsuccessfully opposed the ratification of the treaty on the grounds that Mexico, prior to building of the Hoover Dam, had never been able to use 750,000 acre feet. The treaty was, nevertheless, ratified and Mexico was granted a firm right to 1,500,000 acre feet, a right prior and stronger than the rights of any of our states.

As to the reasons for this generosity, the writer does not know, his assignment being to tell the facts, not the motivation. However, in this same treaty the State of Texas did clear up some rights along the Rio Grande. It has been suggested that powerful southern political interests persuaded the State Department to trade off Colorado River water for additional water for Texas. As our Mexican neighbors say, "Who knows?"

Third, there has been a dispute for many years between California and Arizona over the meaning of certain language in the Colorado River Compact, which, as previously noted, Arizona did not sign but which it would apparently accept under its own interpretation. By this interpretation California would lose 962,000 acre feet of much needed water. California has repeatedly asked Arizona to jointly ask the Supreme Court to decide the matter and abide by that decision. Arizona has repeatedly refused. Since the United States Government would have to be a party to such suit, it is necessary for Congress to give its approval. California has tried to get such action through Congress, but so far Arizona senators with powerful seniority have been able to block it.

Fourth, Arizona now proposes that the U. S. Reclamation Service build what would be called the Central Arizona Project, which would include a great power dam above Hoover Dam, a second dam above Parker, a great conduit including a tunnel eighty miles long and pumps to raise water 985 feet, not for domestic use, but for farming. The lift would require three fourths of the power proposed to be developed.

It is estimated to cost \$738,000,000, not including cost of distribution system to be contributed by the taxpayers of the United States without repayment by the lands benefited. This "reclamation" project would bring water to a portion of central

(Turn to page 38)

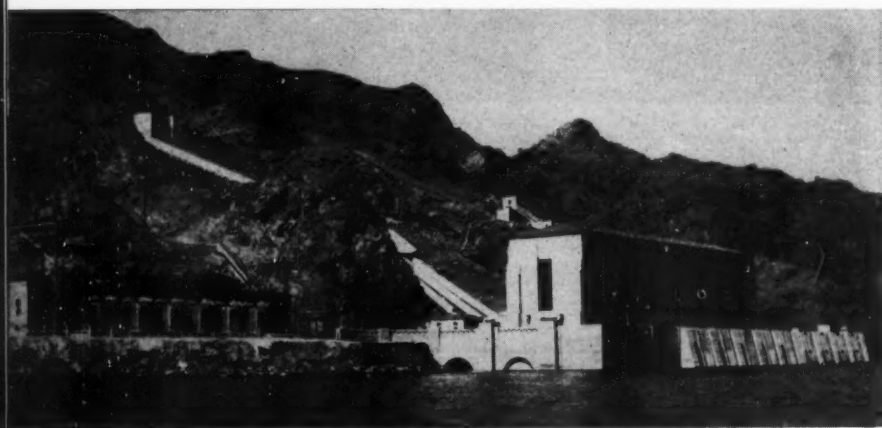


Photo courtesy Department of Water and Power, City of Los Angeles

Where Colorado River water starts its long journey across desert and mountains to the cities and areas comprising the Metropolitan Water District of Southern California. Pumping plant lifts water 300 feet

population of southern California was increasing rapidly and that water from underground sources was being depleted and, therefore, that an accelerated demand could be anticipated which would eventually require the full capacity of this great aqueduct. The wisdom of this foresight is well illustrated by the fact that, since the completion of these works, the population of the area served has increased by more than one and a quarter million people.

It appeared that the water problems of the coming forty or fifty years had been solved. At least that is what the citizens of southern California thought. Here is the strange paradox. In spite of making contracts with the federal government for water, going through long years of filing and perfecting water rights, building expensive and durable works in accordance with the best engineer-

acre feet.

When one consults the U. S. Bureau of Reclamation March 1946 Report (The Colorado River App. 1 pages 282-283), the gravity of the situation immediately becomes apparent. According to this report, the water requirements of the lower basin states, based on present allocation, and, before taking the 200,000 acre feet overestimate into account, already indicated a deficit based on a long-time average of 100,000 acre feet a year. This figure includes the water granted to Mexico as hereafter described.

Second, on February 3, 1944, the Governments of the United States and the United Mexican States signed a treaty at Washington, under which, among other matters, Mexico was granted a right to 1,500,000 acre feet annually from the Colorado River, plus 200,000 acre feet of sur-



RIGHT for Your Woods Work

With International diesel crawlers on the job, your man-
mauling, mule-killing work becomes an easy, economical
tractor operation. These tough and tenacious log-getters
pull through heavy going to bring your logs out easily to
roadside or brow in profitable volume at low cost.

Crane-equipped International diesels at loading points
also save much time-consuming and expensive labor by lift-
ing the heavy loads easily and adding to the daily rate of
log production.

These ground-gripping, long-lasting tractors pay off for
others. They can do as much—maybe more—for you. See
your International Industrial Power Distributor and let him
help you choose the International crawlers and equipment
that are *Right for your woods work.*

INTERNATIONAL HARVESTER COMPANY • CHICAGO

*Tune in James Melton and "Harvest of Stars,"
NBC, Sunday afternoons*

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS



INTERNATIONAL INDUSTRIAL POWER

**Standardize
on Power
that Pays**



Adventuring in Trees and Grass



A soil test kit and the bulldozer, says Mr. McKnight, are the two best tools for restoring an old farm. Here, in the third of a series of six articles, this businessman turned farmer explains their use in developing a complete farm conservation plan on his 186-acre Virginia farm that has been in operation since the days of George Washington. Next month he will deal with his tree farm.

By HENRY T. McKNIGHT

THE more farming we do, the more convinced we become that the two best tools for restoring an old farm are the soil test kit and the bulldozer. From the test tube comes basic information for planning of crops and fertilizers. And from the wide wake of the bulldozer comes the smooth, clean land modern tillage tools can work to best advantage.

This David and Goliath combination is a potent ally of the complete farm conservation plan we are putting into operation at Cornwell. The plan considers each acre on the farm, whether it be under cultivation or in woodland, and considers it in the light of greatest return in profit and enjoyment for time and money spent—now and in the future. The test kit and the 'dozer get the plan into operation with much less strain to muscle and pocketbook. And they do it much quicker.

The handiest reference for a complete farm conservation plan we've yet seen is the Chester County, Penn-

sylvania, Soil Conservation Manual put out by the Chester County Soil Conservation District, with headquarters at West Chester. In this booklet, which can be used pretty much all over the country, we are shown how a mythical local farmer applied the recommended practices of his soil conservation district for the benefit of his soil and to the benefit of his bank account. Let's go down the list of ten recommended practices to see how we check out at Cornwell.

Every modern farm plan begins with the soil and with the land capability map provided by the local Soil Conservation Service office. At the outset, it was decided that the eroded granitic schist that makes up most of our acreage would best respond to a grassland program. This decision lessens our concern with the first two items in the manual's list.

Under a program of grass crops such as ours, contour farming and strip cropping, the first two practices listed in the manual, assume less

importance than they would on the average general farm. But we follow the principles of both. In preparing our land for seeding we work it on the level to prevent possible runoff. Our only alternating of crops is of close-growing grasses, all of which help to prevent wash.

Diversion terraces—We have already installed one terrace, have in mind several more. They are easy and economical to install, and the returns in soil conservation benefits are tremendous.

Pasture improvement—Our last article outlined the grass program for the improvement of our ninety acres of pastures. Other improvements have been to redesign the area to provide each new pasture with access to water. And now each pasture has access to a wooded "loafing space" to give the cattle protection from hot summer sun and chill winter winds. The soil test kit has indicated the required lime and fertilizer program. Its sidekick, the bulldozer, has prepared the land for modern cultivation.

Land clearing—Almost every old farm has at least one area that "got away" from its operator at some time or other. It might be a far pasture that nobody got to with a mower during the war. Cornwell's "Blue Dome" is such a spot. A lovely five-acre hill rising up between two small streams and once a fertile pasture, it is now covered with a ten-year growth of Virginia pine, cedar, dogwood and other less beautiful and more pestiferous smaller stuff. Considering the lay of it and after analyzing the soil, we decided that the "dome" would be more valuable to us as pasture than as an addition to our tree farm. Right now the "Blue Dome" is a Christmas tree plantation where city friends can bring their

(Turn to page 45)

From the wide wake of the bulldozer comes the clean land modern tillage tools can work to best advantage

The soil test tube, here being used by the author, provides basic information for planning crops





Complete transmitter
and receiver in a
single easy-to-carry
case. 152-174 Mc



IT'S EASY TO CARRY — weighs only 44 pounds. The case is only 19½" long, 10½" high, and 9½" deep.



IT CAN BE SET UP ANY PLACE where there's a 115-volt, a-c supply—forestry, utilities, construction projects, etc.



IT'S IDEAL for 2-way operation (police, fire, etc.) in small and medium-size municipalities requiring medium-range communication equipment.

For portable or fixed station use ... the RCA Carfone Station Unit "15"

THIS is the most versatile 2-way radio station ever designed for medium-range communication. It is complete with transmitter, receiver, power supply, portable antenna, handy microphone, and loud speaker—all in a single package.

Easy to carry and easy to set up, this portable unit can be operated wherever there is a 115-volt, a-c outlet.

For fixed station use, place the unit on the operating desk, hook-up the antenna, plug in the power cord, and you're set to go. For portable station use, simply connect the quarter-wave, whip antenna (supplied) and plug in

the power cord. No extra components to carry around. No installation expense involved.

Greatly improved receiver selectivity reduces adjacent channel signals well below interference levels. A newly-designed transmitter modulation control enables you to transmit the full signal potential of the transmitter and maintain 100 per cent modulation at virtually all voice levels — *whether you shout or whisper into the microphone.*

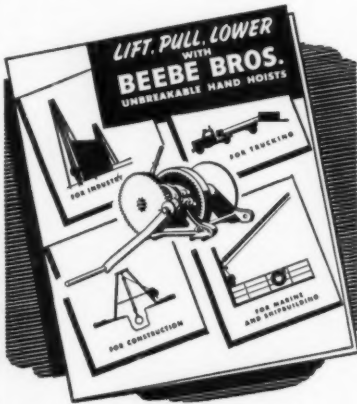
For complete information on the new RCA Carfone Station Unit "15", write Dept. 121 C, RCA Engineering Products, Camden, New Jersey.



MOBILE COMMUNICATIONS SECTION
RADIO CORPORATION of AMERICA
ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

FREE HAND HOIST DATA BOOK



SEND FOR IT TODAY

IN A DETAILED 4-page folder now available, Beebe Bros. tells the complete story about the 2-, 5-, and 15-ton unbreakable Beebe Hand Hoists. As the strongest geared power for their weight in the world, these trouble-free hoists serve a multitude of industrial uses.

The bulletin includes detailed specifications, costs, performance features, and installation data on a wide range of hand hoist requirements. Special power hoist data included, too. Send today for your free copy.

BEEBE BROS.

2728 6th Ave. So., Seattle 4, Wash.

Readers' BULLETIN BOARD

What Manufacturers of Products and Services in the Conservation Field are Saying in Print. All publications free for the asking unless otherwise stated.

CHOOSING the Proper Pump for Tank Truck Operation—ask for "Green Circular." Panama Pump Company, Hattiesburg, Mississippi.

HAND Hoist Data Book—Detailed four-page folder with complete story of 2, 5 and 15-ton unbreakable Beebe hand hoists. Beebe Brothers, 2728 6th Avenue South, Seattle 4, Washington.

CANADA Vacations Unlimited—48-page folder in color. Write Canadian Government Travel Bureau, Ottawa, Canada.

WARD'S 1950 Fishing and Hunting Catalogue—a complete outdoor guide for sportsmen. Montgomery Ward, Chicago, Illinois.

ON the Job Power—booklet describing Diesel electric sets. Caterpillar Tractor Company, AF 3, Peoria, Illinois.

CASE Visual Educational Materials—New catalogue of motion pictures in full sound and color, bulletin-style booklets, wall hangers and charts. Educational Division, J. I. Case Company, Racine, Wisconsin.

SITKA Spruce and Western Red Cedar Lumber—properties and uses explained in eight-page illustrated pamphlets. West Coast Lumbermen's Association, Portland, Oregon.

THE Story of Deming Pumps—main events in the seventy-year history of the Deming Company, with more than fifty photographs including installation views of Deming pumps and various uses of Deming water systems. The Deming Company, Salem, Ohio.

CATALOGUE of Fine Prints and Pictures—32-page booklet listing and illustrating color prints and pictures for home and office decoration. Creste-Andover Company, 62 East 87th Street, New York 28, N. J.

CASE XX Cutlery—illustrates and describes the Case line of stainless steel cutlery, and includes separate price list according to model numbers. W. R. Case & Sons Cutlery Company, Bradford, Pennsylvania.

SPRING Nursery Catalogue—New 1950 spring wholesale trade list of hardwood cuttings, evergreens, shade trees and forest tree seedlings. Boyd Nursery Company, Inc., P. O. Box 71, McMinnville, Tennessee.

SEEN-IN-ACTION Animated Forest Fire Display—four-page folder describing display in full color. A. L. Lind, 5036 Thomas Avenue South, Minneapolis 10, Minnesota.

FIRE Fighting Apparatus and Equipment—96-page profusely illustrated "Catalogue No. 143." W. S. Darley & Company, 2810 Washington Boulevard, Chicago 12, Illinois.

SEAMAN Motors, Brochure—new illustrated brochure "Two New Seaman Contributions to More Economical, Accurately Controlled Processing" describing the new self-propelled Pulvi-Mixer and Trav-L-Plant.

SEE MORE...

...SEE MORE CLEARLY



Bausch & Lomb
Zephyr-Light
7x, 35 mm Binoculars,
\$186, tax included.

It's "seven league boots" for your eyes when you have a fine binocular with you. But choose your glass carefully on its ability to resolve detail sharply. Only through advanced optical design and precision manufacture can this quality be achieved. Before you buy any binocular, study the 32-page Bausch & Lomb booklet, which tells how to choose a glass for your own use. Free on request. Bausch & Lomb Optical Co., 275-O Lomb Park, Rochester 2, N. Y.

BAUSCH & LOMB
Binoculars

How to HANDLE A VARIETY OF JOBS ON A SINGLE, LOWER INVESTMENT

— use the Allis-Chalmers HD-5G and
Tracto-Shovel interchangeable attachments*

You can build roads and fire strips, bunch toppings and clear out underbrush, stockpile and load materials of all kinds, plow snow or load it, handle dozens of other jobs—all with this one machine. Start now to stretch your budget...investigate!



THE MOST ADVANCED TRACTOR IN ITS POWER CLASS

Big Work Capacity—This completely new smaller tractor has big tractor design, balance and stamina...surprises users everywhere with its performance. As owners say, "You've got to see it to believe it."

Just the Right Size to efficiently handle a wide variety of jobs. Has 11,250 lbs. of properly balanced weight (tractor bare)... 40.26 drawbar hp. provided by the smooth-running, economical, 2-cycle GM diesel engine—every down stroke a power stroke!

Needs Less Greasing than an Automobile—Instead of hitting a dozen or more grease fittings every shift, you lubricate only one fitting every two weeks, two other

fittings every five weeks (based on 40-hour weeks). And you operate a full 1,000 hours before replenishing lubricant in truck wheels, track idlers and support rollers.

Simple to Service—All adjustments are unusually accessible. Major assemblies are removable without disturbing unrelated parts—engine, clutches, transmission, etc. There's less downtime—more time working...labor and repair costs are reduced.

Built-in Safety and Convenience—Easier steering and shifting with convenient controls, full vision. Cushioned seat, wide arm rests. Operator gets more done because it's easier to do more!

*
THESE 14 TRACTO-SHOVEL
ATTACHMENTS CAN BE
INTERCHANGED IN BUT
A FEW MINUTES

- ✓ Heavy-duty Bulldozer Blade
- ✓ Heavy-duty Angledozer Blade
- ✓ Tine Fork
- ✓ Lift Fork (4,000-lb. lifting capacity)
- ✓ 1 cu. yd. Standard Bucket
- ✓ 2 cu. yd. Light Materials Bucket
- ✓ ¾ cu. yd. Narrow Bucket
- ✓ 1 cu. yd. Rock Bucket
- ✓ Drag Bucket
- ✓ Trench Hoe
- ✓ Teeth for All Buckets
- ✓ Crane Hook (5,000-lb. lifting capacity)
- ✓ V-type Snowplow
- ✓ Rock Fork

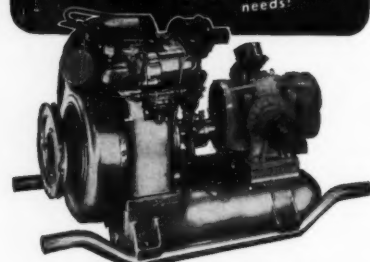
The usefulness of the HD-5 Tractor is further widened by other Allied equipment: 2-wheel scrapers, rippers, rollers; cranes, skid loaders, canopies, winches, root rippers and log carts.

WRITE FOR LITERATURE
—OR ASK YOUR
ALLIS-CHALMERS DEALER
FOR A DEMONSTRATION!



ALLIS-CHALMERS

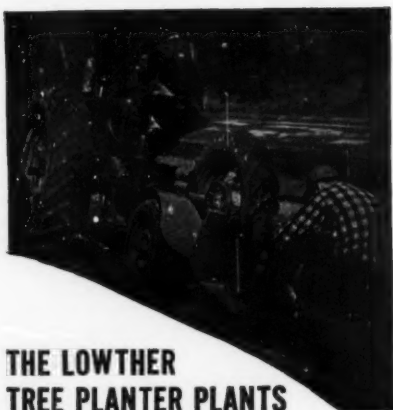
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



NEW AIRCOOLED MODEL S—Choice of volume up to 36 g. p. m. or pressure up to 325 p. s. i. Weight approximately 85 lbs.

WRITE FOR SUGGESTIONS on application of portable equipment to your fire protection problem, with full specifications on appropriate models of the Pacific Pumper. No obligation.

ACCESSORIES, TOO! A complete line of hose, nozzles and other equipment and accessories used with portable pumps. Ask for catalog.



THE LOWTHER TREE PLANTER PLANTS 10,000 SEEDLINGS PER DAY!

With the Lowther Tree Planter, trees are properly planted for maximum survival in any soil because they have been given the right start.

Users all across the country report tremendous savings over hand labor.

For details write:

THE HARRY A. LOWTHER COMPANY
INDUSTRY AVE., JOLIET, ILL.

By The Makers Of The Famous Lowther C-Saw

Douglasfir

(From page 23)

twenty-four hours for hemlock. By that time the tired cones are ready to "give."

Levin is proud of these home-made kilns. Walls have a one and five-eighths inch Simpson board insulation filler sandwiched between two one-quarter inch plywood panels. The inside wall is lined with aluminum. A preheater is used on the cold air intake, and a steam exhaust carries off moisture sweated out of the cones.

Dried cones are dumped into a side-opening thresher, which is a screen-sided four-foot diameter drum with two plywood ends. The drum rotates at about twenty-four RPM within a plywood cabinet; dust from the tumbling thresher action is removed by an exhaust duct on top.

The thresher basket holds about two bushels or 2000 cones of Douglasfir, or three bushels or 60,000 cones of hemlock. A run of three or four minutes separates reluctant seed from the dried cones. Seed drops through the screen into a collection tray beneath the revolving drum. Seed-free cones are dumped into a lower tray after the tree seed has been removed, along with wings and other gathered debris.

The seed thus obtained still carries the membranous wing which nature bestowed so they can flutter gently on forest soils. These wings are removed by feeding the threshed seed into the hopper of a dewinging.

This machine is another screened drum, about three feet long and eighteen inches in diameter, containing four offset two-foot brushes, which revolve on a common axis against the soft screen at about twenty-four to twenty-seven RPM. The dewinged seed drop from a spout at the other end of the cylinder into a box or bin.

The final gadget used in obtaining pure seed is a fanning mill, a standard agricultural machine. Dewinged seed is fed into a hopper and over two vibrating screens; different meshes are used for different species.

An air current generated by a fan blows off light chaff and hollow seed, while the heavier seed falls into a collection box. Seed may be run through the fanning mill several times before it is clean enough for use.

What's the seed payoff for the tree farmer after this cleaning process? A bushel of 1000 Douglasfir cones will yield about seven ounces of clean seed; hemlock, perhaps a pound. There are 43,000 fir seeds in a pound and the much smaller hemlock seeds run 300,000 a pound.

The season's threshing on the South Olympic Tree Farm will produce from 2000 to 2500 pounds of seed. About 120 bushels a day are being threshed on a three-shift basis. Levin says that 1949 was not too good a seed year and so the yield is lighter. But 2500 pounds of seed should total over 100,000,000 little seeds, which is a tidy harvest of certified seedlings for tree farmers.

Cleaned seed is put into cold storage before being used, at temperatures ranging from zero to forty degrees. It is also tested for purity and germination percentage before it is actually allotted for reforestation work. Thus the tree farmer obtains a fairly accurate picture of what the seed will do in a nursery or out on forest land.

Most of the cleaned seed probably will be used at the Nisqually nursery, where it is seeded in long beds at the rate of about five to ten ounces per fifty square feet. Seeded in the spring, it will produce seedlings ready for planting in November of the same year. Much of the seed extracted this season at the South Olympic plant may be seeded this spring.

All of this is just part of the job involved in growing forests for tomorrow's newspapers, houses and other domestic uses. The ingenuity of foresters will always find better ways to accelerate the timber-growing business.

How Woods Glue

EASY TO GLUE—Aspen, western red cedar, chestnut, white fir, hemlock, white pine, redwood and spruce.

MEDIUM—Alder, ash, basswood, butternut, Alaska cedar, eastern cedar, cherry, cottonwood, cypress, Douglasfir, elm, hickory, larch, magnolia, maple, oak, southern pine, yellow poplar, sycamore and walnut.

HARD TO GLUE—beech, birch and gum.

BONDED FOREST TREE SEED

**CERTIFICATE OF ORIGIN BONDED FOR \$10,000.00
by LLOYDS OF LONDON**

Plantation success means dollars wisely invested in your forestry enterprise. A large measure of the success of forest tree seed plantings depends upon the adaptability of the seed to the planting site. We want to supply you with seed from the proper Pacific Coast conifers.

When your order is accompanied with origin specifications and placed prior to the cone collection season, we will collect to your order. Contained in each sack of seed so ordered, will be our \$10,000.00 GOLD BONDED CERTIFICATE OF ORIGIN, assuring you that your seed was collected as specified therein.

Be sure . . . you deal with a reliable seed company and demand a BONDED CERTIFICATE OF ORIGIN. Write, or wire . . .

MANNING SEED COMPANY

Collectors of West Coast Forest Tree Seeds

**840 Dexter Horton Building
Seattle 4, Washington**

**John G. Cameron
Chief Forester**

**F. E. Manning
General Manager**

BETTER TREE SEED—FOR BETTER FORESTS

TREE SEEDS

FOR FORESTERS
and
NURSERYMEN

Ask for Catalog

HERBST BROTHERS

92 Warren Street, New York 7, N. Y.

TREE SEEDS OF THE SOUTH

Collected By A Graduate Forester

SOUTHERN SEED CO.

"Tree Seedsmen of the South"

Specializing in the Pines

ERNEST HINSON, Pres.

BALDWIN - GEORGIA

GROW TREES

FOR XMAS TREES & FORESTRY

Fir, Pine and Spruce in variety.
Seedlings and Transplants.
Write for Price List.

SUNCREST
EVERGREEN NURSERIES

P. O. Box 643, Johnstown, Pa.

SEEDS TREE - - SHRUB

E. C. MORAN

Stanford, Montana

TREES FOR FOREST PLANTING PINE+SPRUCE

Firs, Arborvitae and Other Conifers. We raise all our trees in our own nurseries.

KEENE FORESTRY ASSOCIATES
KEENE, NEW HAMPSHIRE

RARE HARDY AZALEAS, EVERGREENS

Yews. Rare Flowering Shrubs and Trees, Magnolias, 10c to \$1.00 each. Hemlocks, 5-8" \$6.00 per 100. Send for list. Alanwold Nursery, Neshaun, Pa.

TREES FOR SALE

Norway Spruce, Red Pine, White Pine, Scotch Pine, White Spruce, Black Hill Spruce, etc. Prices are reasonable and the trees are GUARANTEED TO LIVE.
WESTERN MAINE FOREST NURSERY COMPANY
Dept. F. Fryeburg, Maine

The Indomitable Finns Rebuild

(From page 12)

nite priority in land acquisition: (1) state forests (forest must give way to agriculture as a land use); (2) mismanaged farms; (3) speculators holding farm land for resale; (4) industrial forest holdings; (5) communal and church forests; (6) real estate owners whose chief occupation is not farming; and (7) operating farms.

Up to the end of August, 1949, a

population centers, and the construction of suitable roadways has been an essential part of the government program. So far, the mileage of highway constructed is 2,600, giving access to the outside world to some 14,000 farms. Land clearing, which is the next step in resettlement, is as yet very far from complete, because of the lack of power equipment and the diversion of at least a part of



Fennia Kuva Photo

The indomitable Karelians have already completed 30,000 new homes in the communes of their forced adoption

total of 4,242,500 acres had been acquired by the Ministry of Agriculture for resettlement purposes. Of this, 650,000 acres were actually in cleared fields immediately suitable for tillage (fifteen percent), and 550,000 acres suitable for conversion from forest to crop land. This left a little under three million acres for productive farm forests, or about seventy percent, which is average for all the farms in Finland. The total number of new farms involved in this purchase program was 39,300, while the number of small farms increased in size was 22,800. This means that these new farms had an average area of a little over 100 acres, of which thirty-five acres were either cleared or suitable for clearing. On the small farms the average area is now fifty acres, of which half is cleared or suitable for clearing.

In many of the resettlement areas, the land, while suitable for agriculture, was quite remote from existing

the evacuees' labor to the construction of homes and buildings for stock. Of the half million acres listed for clearing, only 100,000 are now ready for the next step, which is ditching.

It is difficult for Americans to realize that in Finland no agricultural use of the soil is possible without drainage, usually of the open ditch variety. The combination of a very humid climate and a preponderance of morainic soils makes drainage imperative. On a total of 12,300 farms, open ditches affecting 213,000 acres of crop land have been established.

The expense of this program has been a large item in Finland's budget, demanding heavy outlays over and above the fifteen to twenty percent of national income that is required each year to meet the onerous Russian debt. Up to the end of 1948 the program had cost the government \$100,000,000. Half of this sum was for the purchase of land, road construction and drainage. The other

half was for loans to the Karelians for land clearing, drainage, buildings and farm equipment. To cover this total expense the government has found it necessary to make a special capital levy on the public.

Because provision was made for some cleared land to be immediately available for each farm purchased, tillage and the raising of crops could proceed at once on a small scale. The problem of housing for both family and stock was quite another matter. That first winter of 1945-1946 will long be remembered by thousands of Karelians who lived with their stock in makeshift shelters, some underground, some above ground of canvas and tin. In the spring of 1946 the building of permanent homes and barns for stock began in earnest. The first building to be erected was, of course, the *sauna* (see *American Forests* for April, 1949, for a description of this characteristic bath house of every Finnish farmer). They not only bathed in the *sauna* but lived in it while their home was being built.

Like farmers the world over, the Karelians are handy with tools, and their substantial, solid homes were built log on log, peeled and shaped with precision and care. Land clearing not only provided more agricultural area, but shelter and fuel during those endless months of hewing a home and a farm out of the forest.

The Finns have a noun in their vocabulary, *sisu*. There is no single word in English that is its equivalent. It means the indomitable determination to succeed in spite of insuperable obstacles. Certainly these heroic Karelians who up to the present have completed 30,000 new homes in the communes of their forced adoption, have shown *sisu* to a marked degree.

During the past three summers real and practical help has been given the Karelians in their land clearing and home building work by volunteers working in what are known as International Work Camps. In this service of love, Finnish youth have been joined by young men and women from all over Europe and the U.S.A. Throughout the long summers these young people have put in forty hours a week of strenuous physical labor, without a cent of pay. In fact, they have paid their own way to the camp and their own board while there for the privilege of helping those in less fortunate circumstances.

And so Finland rebuilds and carries on in a manner that compels the admiration of the entire world.



When snow and ice cause nervous strains



Relax upon these Speedlined trains...

OLYMPIAN
HIAWATHA
Chicago—Twin Cities
Spokane—Seattle—Tacoma

TWIN CITIES
HIAWATHAS
2 a day each way
Chicago—Milwaukee
St. Paul—Minneapolis

MIDWEST
HIAWATHA
Chicago—Des Moines—Omaha
Sioux City—Sioux Falls

CHIPPEWA
HIAWATHA
Chicago—Milwaukee
Green Bay—Upper Michigan

NORTH WOODS
HIAWATHA
Serving Wisconsin River Valley



HIAWATHAS

During the dangerous winter months, leave your car at home and make intercity trips throughout the West and Northwest via The Milwaukee Road. You have no worries about snow storms, fog, icy highways or early darkness when you ride the smooth, steel highway of the HIAWATHAS. If you really need a car at your destination, get one through the convenient Rail-Auto Service.

The orange-maroon-and-silver HIAWATHAS are all new and luxurious. Accommodations are available to suit your travel budget. Round trip coach fares on The Milwaukee Road are just over 2¢ a mile.

Ride with us. Ask your local railroad agent for information, or write to H. Sengstacken, Passenger Traffic Manager, 708 Union Station, Chicago 6, Illinois.

THE MILWAUKEE ROAD

20 Million Trees a year



Seedlings for Forest and Christmas Tree Plantings. Complete line. As low as \$16.00 per 1,000.

Strong, sturdy, well-rooted seedlings and transplants for Conservationists, Timber-Operators, or owners of idle land. **MUSSER TREES ARE GROWING IN ALL 48 STATES.**

For special Xmas Tree Growers' Guide, and complete Planting Stock Price List, Write Box 27-C

MUSSER FORESTS, INC.,
Indiana, Pa.



CHESTNUT TREES
CHINESE CHESTNUTS
RESIST • BLIGHT
50 Years With Nuts

easily grown, heavy yielders Northern Strains

BEST VARIETIES IN U. S.

Plant for Nuts—Profit—Shade—Beauty—Fun
English Walnuts. - Send postcard now for FREE booklet and prices. Many varieties. Excellent ornamental.

HIGH BUSH BLUEBERRIES

Blueberry King's Packet. Grow at home—we tell you how. Best garden varieties. Write:
SUNNY RIDGE, 432 New St., Swarthmore, Pa.

CHINESE, ENGLISH & AMERICAN

HOLLY

22 English Varieties
Hardy Named Stock
Send for FREE CATALOG

The WILMAT HOLLY CO.
Box 304-D NARBERTH, PA.

HOW TO PLAN . . . A MEMORIAL FOREST

To stimulate the establishment of Memorial Forests, a step-by-step guide has been prepared by the staff of The American Forestry Association. It is an attractive two-color booklet, and is available at ten cents a copy.

THE AMERICAN FORESTRY ASSOCIATION

919 - 17th St., N. W. Wash. 6, D. C.

Water and the City of Los Angeles

(From page 28)

Arizona (assuming that such water can be taken away from California) at a cost of approximately \$1,850 an acre, or more than ten times as much per acre as the average for all western reclamation projects to date.

Public funds would be used to enrich the owners' private lands. It is estimated that the 420 larger ownerships would receive benefits of approximately \$230,000,000, or an average of about \$550,000 each.

It should be emphasized that those now farming the tilled land in the area proposed to be supplied started their operations with full knowledge that they would pump out the stored water of thousands of years in a few decades at best. From the inception these farming operations were predicated on a rapidly depleting water supply. These farmers knew that the natural replenishment of their water supply was minuscule and that their operations were on a temporary basis.

Many readers will conclude that such a fantastic project giving fabulous benefits to a favored few will never be undertaken. Unfortunately, they may be wrong. There are powerful forces in federal bureaucracy that may give great support to this or any similar project involving the potential political power that the expenditure of such vast sums of money would provide.

So southern California has constructed and is paying for a fine water system built in good faith and with an apparent sure supply. It has already lost one portion of its safe yield by the error of overestimation of the total supply of the Colorado River. It has lost its share of the lower basin's safe yield through the gratuitous gift of approximately a

million acre feet to the Republic of Mexico. Now Arizona would like to grab another part, and in addition would like the nation to contribute the entire bill, three fourths of a billion dollars. If this were approved by the Congress, Los Angeles County alone, as the payer of one-fourteenth of the nation's taxes, would be in the bitter and ironical position of contributing over \$53,000,000 to a project designed to take away a substantial part of its future water supply.

There is no doubt that southern California has done its part to solve its water problems. It will be paying the cost for many decades. The repayment for Hoover Dam, for instance, will not be completed until 1987.

While many of the arguments used by California and Arizona are complex and at times confusing, the problem is fundamentally quite simple. There is not enough water in the Colorado River to give to California the amount that its contracts with the federal government call for and to give Arizona the water for the proposed Central Valley Project.

Southern California now has a population of over five million and is growing rapidly. Its people believe that men and women should have a higher priority for water than acres of land. The decision the nation faces is whether to support southern California so that it may have a secure and ample water supply for its millions, or to take water from southern California and give it to Arizona to enrich a few thousands—and, in addition, to give Arizona three quarters of a billion to build a fabulous water system with no repayment toward the cost.

HALE FZZ—THE FORESTER'S WORKHORSE!

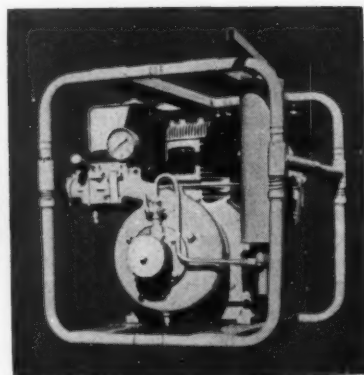
**Fight
Fire
with a
Hale**



The Portable Hale FZZ will pump, from draft, up to 60 GPM at 90 lbs. Its companion, the HPZZ, will do 15 GPM at 200 lbs. (Both units will pump larger volumes at lower pressures.)

Write for literature today; let us know if you want a demonstration!

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.



New CCC Proposed

Re-establishment of the Civilian Conservation Corps will be proposed in a bill Senator James E. Murray, of Montana is prepared to introduce in Congress. It will call "for the performance of useful public work in connection with the conservation and development of natural and human resources of the United States through the employment of youthful citizens . . . in need of employment."

Senator Murray states that in November 1949, there were 500 thousand young men unemployed and probably another half million in temporary or part-time jobs.

His plan is to use not more than 500 thousand volunteer enrollees between the ages of seventeen and twenty-three. All camps would be operated by civilians, and there would be no military drill or commercial activities. Enrollees would have to volunteer for not less than one year and would be paid \$60 a month, plus room and board, transportation, medical and hospital care. At maximum, the cost to taxpayers would be \$900 million a year.

Here are other Washington developments of interest to conservationists:

Secretary of Agriculture Charles F. Brannan has established a National

Forest Advisory Board of Appeals to advise him on any appeals from decisions of the chief of the U. S. Forest Service. The board consists of five employees of the Department of Agriculture from agencies other than the Forest Service.

Senator Estes Kefauver of Tennessee has introduced a bill (S. 2878) which authorizes the development of a recreational area on Roan Mountain in Pisgah National Forest, North Carolina, and Cherokee National Forest, Tennessee, to be known as Rhododendron Gardens. It calls for construction of such access and forest roads and trails and such buildings and other facilities as may be necessary to make the scenic attractions of the area available for the enjoyment of the public.

Mrs. Helen Gahagan Douglas, representative from California, has introduced H. R. 6920, which provides for the carrying out of the recommendations of the Commission on Organization of the Executive Branch of the Government relating to the Department of the Interior.

Representative James T. Patterson of Connecticut has introduced H. R. 6984 which provides that manufacturers' excise tax on sporting goods be repealed.

Champion Portable Fire Pumps



\$99
Model
No. 1 1/2 AE

DARLEY ENGINEERING BRINGS YOU MORE WATER and HIGHER PRESSURES with NEW LIGHT-WEIGHT PORTABLES.

In designing these Pumpers Darley engineers have blended the power requirements of the Champion Centrifugal pumps with the power and speed characteristics of the Briggs and Stratton gasoline engines.

Automatic Primer.
Champion Portable Pumps, being centrifugals, will handle without injury, water with sand, dirt and gravel content.

Model No. 1 1/2 AE—Weight 57 lbs. Dimensions: width 12 inches, length 16 1/2 inches, height 18 inches.

Capacity up to 40 gallons per minute. Pressures up to 75 lbs.

Model No. 4 AE—Weight 115 lbs. Dimensions: width 18 1/2 inches, length 19 inches, height 20 inches.

Capacity up to 200 gallons per minute. Pressures up to 75 lbs.

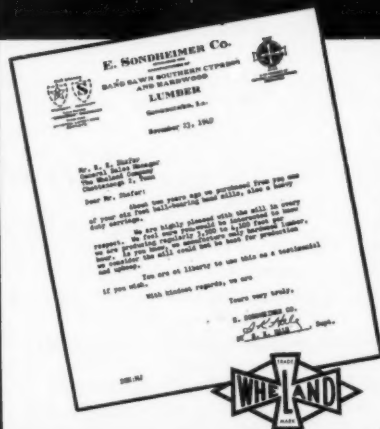
Model No. 7 AE—Weight 150 lbs. Dimensions: width 19 inches, length 21 inches, height 23 inches.

Capacity up to 300 gallons per minute. Pressures up to 80 lbs.
Write for specifications and low prices on the complete 1950 line of Champion Portables.

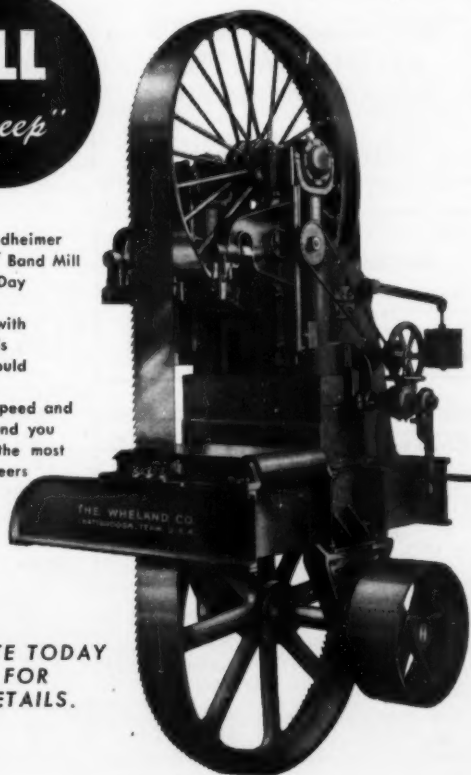
W. S. DARLEY & CO., CHICAGO 12
Manufacturers of Champion Fire Pumps and Apparatus

WHELAND 6' BAND MILL

"can't be beat for production and upkeep"



Like hundreds of others, the E. Sondheimer Company has found the Wheland 6' Band Mill exceptionally sturdy and accurate. Day after day the Wheland Band Mill turns out the maximum of lumber with truer lines and fewer miscuts. This makes more money for them. It could also make more money for you. Couple this 6' Band Mill with the speed and accuracy of a Wheland Carriage and you have the ideal setup for getting the most from your timber. Wheland engineers will be glad to show you how this equipment can actually pay for itself IN YOUR MILL in less than 12 months operation.



The WHELAND Company

CHATTANOOGA, TENNESSEE

MANUFACTURERS OF COMPLETE SAWMILLS AND AUXILIARY MACHINERY
CIRCULAR SAWMILLS—HEAVY, PORTABLE • BAND SAWMILLS • EDGERS
AND TRIMMERS • TRANSMISSION AND CONVEYOR MACHINERY

FOR OVER 80 YEARS . . . THE FOREMOST NAME IN SAWMILL EQUIPMENT

WRITE TODAY
FOR
DETAILS.

CONSULTING FORESTERS

When in need of the services of a Consulting Forester, members and friends of the Association are urged to write the following for complete information. Other Consulting Foresters are invited to write us for advertising rates in this Department.

FOREST PROPERTY

Estimates — Appraisals — Management
PRENTISS & CARLISLE CO.,
 INC.
 107 COURT STREET BANGOR, MAINE

FORESTRY CONSULTANTS

Management — Acquisition
 Marketing — Conservation
 Cruising — Throughout
 the South

T. M. HOWERTON, JR.
 Madison, Florida

WILLIAM T. COX

Consulting Forester—Biologist

Examination of wild lands. Advice on timber and wildlife properties and problems in the United States, Canada and Latin America.

OFFICE:
 2186 DOSWELL AVE., ST. PAUL 8, MINN.

Mississippi Delta Managing Hardwoods Gulf States Managing So. Pine

KEITH CRANSTON

Timber Estimating Services
 Leland Mississippi

COUNSEL FOR
 PRIVATE LANDOWNERS

FOREST AND RECREATION PROPERTY

SELECTION
 APPRAISAL

REFORESTATION
 MANAGEMENT

E. V. JOTTER

30 Cedarlawn Drive Dayton 5, Ohio

FORESTRY CONSULTING SERVICES

FOREST MANAGEMENT
 FOREST PRODUCTS
 WATERSHED MANAGEMENT

HARVEY J. LOUGHEAD
 15 EAST FOREST ROAD, BILTMORE STATION
 ASHEVILLE, N. C.

FOREST RESOURCES OF THE DOUGLAS FIR REGION

By BURT P. KIRKLAND

Price \$1.00

THE AMERICAN FORESTRY ASSN.
 919 - 17th St., N.W. Wash. 6, D. C.

It Won't Happen in Akron

(From page 16)

were planted to fruit trees. Today the city has 150 acres in fruit—apples, pears, cherries and a vineyard of thirty-nine acres. As high as 35,000 bushels of apples have been harvested in a single year and several hundred tons of grapes. A ready market for this fruit was found in nearby cities.

This reforestation and other projects continued on a limited scale until the depression that jolted Akron off its boom-town perch and plumbed employment to the depths. The depression actually spelled progress for LaDue's department, thanks to its ability to capitalize and follow through on work projects suddenly opened up. The depression found the department with over 300,000 trees ready in its nurseries.

Prior to 1929 parcels of land totaling over 8000 acres had been purchased in the upper reaches of the Cuyahoga, above Hiram Rapids, for a future reservoir basin. Like other land acquisition efforts of the department, these purchases were combatted originally but the wisdom of the move was clearly demonstrated during the drought periods of 1935 to 1939 and 1943 to 1944 when many Ohio cities suffered from lack of water.

Suddenly, in the height of hard times, this land was regarded in a new light as a staging ground for work projects for hungry men. Men were trucked to the watershed and in due course 2000 acres of old farm land and slashed forests was cleared. Now LaDue well realized that this farm-clearing work carried on at a cost of \$250,000 would be in twenty years just so much wasted effort unless a permanent land-use program was inaugurated to prevent its deterioration all over again.

In this way "Forester" LaDue and "Orchardist" LaDue became "Farmer" LaDue. Three hundred head of Hereford cows were brought in from western ranges and 1000 hardy Delaine-Merino sheep from southern Ohio. At the same time, motorized farming equipment was purchased and a farm overseer hired to direct a force of ten farmers. All personnel was placed in available farm houses on the watershed at "token" rental. Supplementing his pay, he was given a cow, chicken feed, potatoes and firewood in fixed amounts.

Farms too widely scattered for the department's own use were rented to tenant farmers under standard agreements as regards use of land, non-

conversion of sodded areas into plow land, cultivating, fertilizing, crop rotation, use of woodlots and fencing. Rentals were collected by the farm overseer who also checked to see that sound conservation practices were being followed under these controlled farming agreements.

Gradually, this previously idle land returned to productivity. Contour farming and rotation of crops and cover were used in the production of potatoes, soy beans, clover and timothy hay, corn, barley, oats, and other crops. LaDue's aim was to make these farm operations "examples" as well as self-sustaining and self-supporting. In this he has succeeded. Sufficient crops are raised to carry stock through the winter, using existing barns on purchased farms. Surpluses are sold to maintain fixed inventories of high grade.

The key purpose in purchasing the sheep was to keep the land cleared and to maintain grasslands, meanwhile deriving some revenue to offset expenses. On the average about 6000 pounds of wool are realized from this investment every year. The sheep have also served admirably as lawnmowers in keeping the grass clipped in the fenced enclosures around equalizing reservoirs both in and outside the city limits.

Another income producer has been the operation of maple sugar camps on municipal property. Geauga County is the center of the maple sugar business in Ohio and an average 3000 buckets hung out in each bush has produced as high as 650 gallons of syrup a year. Each bush has its evaporator house and standard equipment. Firewood for the evaporators is a by-product of the department's logging operations, which has provided the department construction lumber for 20 years.

Two new reservoirs were also realized by Akron as a result of the depression. Five hundred acres of land purchased in 1929 in the upper valley of the Cuyahoga at East Branch were now augmented by another 1000 acres—and under a PWA contract 600 acres of this was cleared, a public road raised and a rolled earth dam and spillway constructed.

Another 2750 acres were acquired at Mogadore, eight miles from the city in the valley of the Little Cuyahoga. A WPA project put 2000 men to work here clearing 1200 acres. A highway, earthen dike and rolled earth dam were built and a 1000-acre

lake created for the threefold purpose of providing flood control, recreation and industrial water supply. Here again the investment was protected. Nurseries were established at both developments and reforestation plans started.

Today, this little community of workers that comprises the Akron Water Department is a well-integrated, well-managed concern. This past year a full-time graduate forester has been employed.

In recent years the Ohio public has come to appreciate this man LaDue and what he has done for the City of Akron. Honors have been heaped upon him and as recently as January 13 the hard-working Ohio Forestry Association honored him for his work in industrial conservation. Clubs invite him to appear before them and visitors come from afar to view his development program.

LaDue is gratified at this interest but wonders on occasion "where all these folks were twenty-five years ago," a statement that brings a gleam of amusement to the eyes of brother pioneer conservationists in his state. Those were the lonely days when the sledding was rough. But it had to start some place and it is largely due to such men as LaDue that a thoroughly awakened state now holds a pre-eminent position in American conservation.

One of Engineer LaDue's greatest pleasures is to desert his office in the City Building and drive out to his watershed. Once there he leaves his car and tramps through his woods and his fields keenly noting every new development, including new natural seeding since his last visit, scouting a herd of deer, and the work program of a beaver colony that suddenly appeared in the reservoir area.

LaDue loves to watch those beavers. And, as he watches, the chances are he's making new plans for Akron's water system. Remember, "in the water supply business ten-years from now is today."

Why Loggers Who Cut the TOUGHEST TIMBER Stick to *Mall* CHAIN SAWS THE BIG 10 LINE



Prove This to Yourself at Our Expense

Write for a FREE Demonstration, Name of Nearest Dealer, and Illustrated Literature.

- More Power • Lighter Weight
- Easier 1-Hand Rewind Starter
- Carburetor Feeds Gasoline to Engine In Any Position
- Stall-Proof Clutch
- Chrome-Plated Cylinders
- Automatic Chain Oiler
- Chain Tensioning Device
- Fastest Cutting Chains
- Lightest Weight Consistent With Safety, Efficiency, and Economy
- Factory Owned Service Stations and Dealers from Coast to Coast give Quick, Dependable Repair Service



MODEL 7GA MALL CHAIN SAW
10 different capacities from 18" to 12'. 2-cycle gasoline engine. Bow Saw Attachment available.

\$415⁰⁰

24" MODEL



\$290⁰⁰

18" MODEL

Model 12A MALL CHAIN SAW 18", 24", 30", 42" Capacities
Light enough for 1-man operation under production logging conditions. Husky enough to fell, buck, and limb the toughest timber. Alloy steel guide plate and chain are removable for changing to various sizes. 2-cycle gasoline engine. Bow Saw Attachment available.

Over 1000 Mall Portable Gasoline Engine, Electric and Pneumatic Power Tools for a million jobs. A dealer in every town can supply you.

MALL TOOL COMPANY

7777 South Chicago Ave.

Chicago 19, Ill.

Panama Ball Bearing Pumps Are Positive Displacement Type

They can be supplied for Fan Belt Drive or with Independent Engine Drive. All are equipped with Compensating By-pass to give smooth even performance at any speed, pressure or volume. They are self priming. They give maximum pressure at minimum speed. They are designed to fully utilize every gallon of the limited supply of water carried aboard the truck. The Ball Bearings insure long life.

Ask for Green Circular

PANAMA PUMP COMPANY

Hattiesburg, Mississippi, U. S. A.





Free Catalog

Just off the Press
Fully illustrated, 92
pages, showing spe-
cial fishing tackle,
footwear, clothing
and forty-eight other
leather and canvas
specialties of our
own manufacture.

L. L. Bean, Inc.
69 Main St.
Freeport Maine
Mfrs. Fishing and
Camping Specialties

3 Patents. Best
material. Sold by
the thousands.

Infringers and
imitators warned.
Best
Chrome
Steel—
Strong,
Durable

THE RENOWNED
Rich Forest Fire Fighting Tool
Write for Prices and Description
Geneva Rich Bickel **WOOLRICH, PA.**

**Last Call For
Planting Assortments**
PACIFIC NORTHWEST
CONIFERS
Write for Price List
WOODSEED
P.O. Box 647 Salem, Ore.

Mirage of River Basin Development

(From page 20)

numerous small tributary drainages in the Tennessee Valley—the unobtrusive creeks and slender rivers whose names have only local familiarity—must still bear the excess runoff from hillsides lacking an adequate protective mantle of forests or grass cover. Here the floods come, repeatedly, and farmers cannot plant their crops on the overflow areas; or, if the land is dry enough for sowing, the silt-laden waters may wash out or ruin their plantings, or even cut away the land itself. The land which lies above these watercourses has not been safeguarded from floods and sedimentation to any appreciable extent. On small watersheds, dams and reservoirs are not needed so much as fundamental work on the land.

Soil losses and destructive surface runoff in portions of the valley are steadily being reduced through the good husbandry practices sponsored by TVA and other federal and state agencies, but these gains have been accomplished not by systematic work on each tributary watershed, but rather as a result of the efforts of scattered farmers or groups of farm-

ers to rebuild soil fertility and keep the land in some kind of cover the year round.

No specific attempts have been made by TVA to help farmers organize cooperative undertakings—as illustrated by some watershed projects of the U. S. Department of Agriculture—for the express purpose of saving bottomland strips, controlling roadside runoff and erosion, or safely disposing of excess waters that flow from farm to farm and wash away millions of tons of soil every year. The unified watershed approach has been neglected because it does not readily fit into a policy which stresses the “sample” demonstration technique—limited to the single farmer or group of farmers—leaving all the other landowners in the watershed to go their own way.

IV

It was only as recently as September, 1949, that TVA formulated a policy dealing with small rural watersheds. The Board of Directors affirmed that it stood ready, in cooperation with other agencies, to de-

EVERYTHING YOU WANT TO KNOW ABOUT FORESTRY

IS IN THE

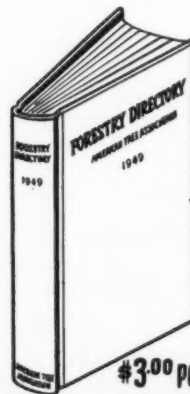
FORESTRY DIRECTORY

PUBLISHED BY THE AMERICAN TREE ASSOCIATION

OVER 400 pages packed with information on every phase of forest conservation, including statements on the development and present work of all federal and state agencies, semi-public, industrial, and other organizations.

More than 60 pages of basic statistics covering state forestry organization, forest areas, timber stand, areas burned, areas under organized protection, areas planted, cutting practice laws, etc.

Descriptions of all professional forestry schools, complete tabulation of national forest areas, verbatim text of important forestry laws, lists of community forests, wilderness areas, state parks, Arbor Days, state trees, shade tree commissions. Reading list of books on forestry, notes on forest industries, notes on historical developments.



#3.00 POSTPAID

**“THE MOST USEFUL
REFERENCE BOOK IN THE
WHOLE FIELD OF
FORESTRY”**

9 x 6 inches, cloth bound
Illustrated
\$3, Postpaid

American Tree Association,
1212 16th Street, N. W., Washington 6, D. C.

Enclosed is \$_____ for _____ copies of the FORESTRY DIRECTORY.

Name _____

Address _____

City and State _____

velop and assist "in conducting programs in selected watersheds for the purpose of achieving the optimum use and control of water, land, and selected resources." The director of the Division of Forestry Relations was designated as coordinator of small watershed management. No concrete programs, however, have yet been announced under this policy.

It seems to some observers that TVA is resting too easily on its engineering laurels and on its test-demonstration accomplishments (which have only so far reached about one-fourth of the farm acreage in the valley). TVA has not undertaken a thorough inventory of the conditions and problems of the water resource in the valley, both surface and underground, which would provide the basis for a truly comprehensive program of watershed rehabilitation and management. Its investigations in the field of land hydrology are still meager. Yet, without the data derived from extensive inventories, TVA cannot intelligently foster the integrated land-use practices which would efficiently develop the full capacities of the soil and its cover for water absorption and storage as

well as for sustained production of food and fiber.

The first or river-control phase of TVA's job seems to be nearing completion. Another—and in our opinion—greater task awaits the agency if it can shed its fixation on the engineering approach to the solution of our water problems and foster, in cooperation with local, state, and other federal agencies, the full-scale development of the land according to the best-known principles of watershed management. Here is a challenging field of activity which TVA has so far failed to enter, although its original mandate from Congress plainly authorizes it to do so.

V

Since 1933, when TVA was created, the trend toward unified river improvement has become pronounced, although river basin development is still a mirage in the United States. The most significant experiments have been launched on the Missouri and Columbia River basins.

Rejecting President Roosevelt's proposal in 1944 for a Missouri Valley Authority, Congress authorized the Pick-Sloan Plan (General Pick represents the Army Engineers and

ATTRACT UPLAND GAME!
Make Your Property Attract, HOLD, Feed MORE
QUAIL, PHEASANTS, GROUSE!
and other Upland Game & Song
Birds, Wild Ducks, by planting
Wildlife Natural Food & Cover
Plants; for all conditions &
Climate. Suggestions, publica-
tions FREE!
WILD LIFE NURSERIES
ROUTE 51, OSHKOSH, WIS.



ABOUT TIME TO ORDER !!!

NEW CROP VERMONT MAPLE SYRUP

Gallon, \$7.50; Half-Gallon, \$4; Quart, \$2.25

Any Postoffice in U.S.A.

FOUR SPRINGS FARM

DANVILLE,

VERMONT

Bartlett Professional Hand Pruner



This Drop Forged Tool Steel nine inch Hand Pruner has a crucible steel blade and hardened hook. Unsurpassed. Special price, \$5.50 prepaid. Ask for catalog showing a complete line of pruning tools, shears, saws, scrapers, etc. Bartlett Mfg. Co., 3019 E. Grand Blvd., Detroit 2, Mich.

When writing Advertisers —

Please Mention

AMERICAN FORESTS



DESIGNED FOR TEAMWORK

Utility industries are demanding more and more economies of mileage and man-hours. Motorola FM 2-way Radio in answer to this demand is producing spectacular results with superior "adjacent channel" equipment.

Specific information applied to your* application is immediately available—it tells you how you can dovetail each working part of your project into a fast-hitting team with instant radio contact.

**RESEARCH LINE
FM 2-WAY RADIO**

Motorola

*Electric Power, Pipe Line, Forestry, Construction... In each different application precision engineered 2-way radio systems by Motorola are cutting operating costs way down, by eliminating dead-mileage, saving land-wire time and expense, speeding production, and reducing job time on hundreds of individual functions.

Communications & Electronics Division • 4545 W. AUGUSTA BLVD. • CHICAGO 51, ILLINOIS

REFORESTATOR Mechanical Tree Planter



Manufactured by
L. W. MERIAM CO.
Elsie, Michigan

SOUTHERN GLO TIMBER MARKING PAINT

White — Yellow — Red — Blue
Prices on these colors for immediate shipment.

Paste in 5 gallon cans \$1.45 gal.
Ready Mixed 5 gallon cans 1.30 gal.
1 gal. cans—4 to a case .15 more/gal.

Order direct from factory.
All prices f.o.b. Sumter, S. C.

**SOUTHERN COATINGS AND
CHEMICAL COMPANY**
SUMTER SOUTH CAROLINA

A SERVICE TO READERS

Do You Want to Know
who can estimate a stand of
timber, or prepare plans for
reforesting cut-over lands?
Do you want to know who
handles the best—

**RADIO EQUIPMENT
PLANTING AND NURSERY
EQUIPMENT
FIRE PUMPS
FIRE HOSE
HAND TOOLS
LOGGING EQUIPMENT
TREES AND SHRUBS
POWER SAWS
TRUCKS AND TRACTORS
TREE PLANTERS
POWER GRADERS
CAMPING, FISHING, OR
HUNTING EQUIPMENT**

We are always glad to cooperate with our readers in securing for them the latest prices, catalogues and other specific information. Let us help you.

SERVICE DEPARTMENT
The American Forestry Association
919 17th Street, N. W.
Washington 6, D. C.

Sloan the Bureau of Reclamation) for the Missouri Valley, a heterogeneous mixture of multipurpose projects.

A hasty merger of programs fostered by the two competitive agencies, this plan contains a number of individual projects subjected to devastating criticism by one or the other of the two rivals. As finally formulated, the plan includes three large multipurpose reservoirs on the main stem of the Missouri twenty-four secondary reservoirs, and seventy-eight smaller reservoirs on the tributaries to provide a total of 100 million acre-feet of storage—nine times the storage of the TVA system. Some 1500 miles of levees from Sioux City, Iowa, to the river's mouth near St. Louis, Missouri, will protect from flooding about 1,800,000 acres of cultivated land in the lower valley. Facilities will be built to bring water to about 4,800,000 acres of irrigable land. Hydroelectric power plants will be constructed with an ultimate capacity of 1,500,000 kilowatts. A nine-foot channel will be developed on the lower Missouri from Sioux City to the mouth.

The cost of these comprehensive engineering structures at 1948 prices was estimated at nearly \$5,000,000,000 over a six-year period.

Not an integrated river basin scheme, the Pick-Sloan Plan has been subjected to a mounting barrage of criticism from engineers, conservationists, state and federal administrators, and other experts. The Hoover Commission Task Force on Natural Resources declared that the plan would not accomplish the desired integration of the Missouri basin's water resources.

"There is serious question," it remarked acidly, "in this case whether agreement between the agencies . . . is not more costly to the public than disagreement.

"The program as a whole," it concluded, "has been planned very nearly backwards. . . The big dams and other engineering structures . . . were planned without reference to the multiple demands for the same water. . . The result of this order may be the flooding of good agricultural land. . . (and) the construction of navigation works which offer no assurance of achieving the end sought by the region." Most serious of all is the fact that "the programs were planned . . . without adequate data on soil fertility, irrigability, water amount and quality."

The lopsidedness and shortcomings of the Pick-Sloan Plan gave impetus

to demands for a supplementary conservation program on the land. As a result, such a program, broader in scope than anything of its kind previously conceived for any American region, was submitted for the consideration of Congress by Secretary of Agriculture Brannan in August, 1949.

This scheme encompasses "a program to conserve and improve the soil, to reduce erosion and runoff, to protect, improve and enlarge the use of forests and ranges, to adjust land uses, to stabilize dry-land agriculture, to provide shelterbelts, and otherwise to make the most of the valley's farms, ranges, and forests."

The Department's blueprint, designed to complement the costly reservoirs being built in the Missouri Valley by the Army and the Bureau of Reclamation, would involve an expenditure of about \$3,000,000,000 over a 30-year period. In addition, farmers and other private landowners and local agencies would be expected to invest over \$5,500,000,000 in supplementary soil improvement and land adjustment measures.

Thus we have for the Missouri Valley not an integrated basin development but an engineering program that is full of "holes" and the outlines of a yet to be articulated watershed restoration and management program. The fact that engineering structures are going up whereas the comprehensive watershed program has not been started, makes the task of correlation without stopping further construction seem well-nigh impossible. True river basin development in the Missouri Valley—as in the Tennessee—is still a mirage.

VI

Maybe it is too late to secure an integrated land and water program on other major watersheds, but it is not too late in the Pacific Northwest. Development of this region's water resources has only begun. There is no real opportunity, however, under loose cooperative arrangements between the various federal and state agencies for an adequate, unbiased review of the conflict between the development of dam sites and the preservation of the remaining commercial fisheries; or of the necessity for undertaking irrigation projects at the rates—or in the locations—currently planned. Also, there is no assurance that the dams and other engineering works now being built on the Columbia and its tributaries will not de-

(Turn to page 46)

Adventuring in Trees and Grass

(From page 30)

children to cut the family tree. When enough of our friends take advantage of our offer and when time permits us more particular attention to this area, it will be ready for cattle and for paying its way.

Obstruction removal—Here's where our rented farmland Goliath really pays off. Turn a bulldozer loose on your great-grandfather's old fencelines and watch the resulting improvement in your farming operation. Old fencelines were rarely planned. They grew to fit the needs of farms many years ago and now make inflexible barriers to modern farming equipment which was designed to work on the level with as few turns as possible. At Cornwell we are tearing out the old wire (on some fencelines two and three old fences deep), pushing away the honeysuckle and even uprooting some of the trees. Soon most of our interior fencelines will be electric. Eventually, when we are certain of our exact interior fence locations, our pastures will be bounded entirely by multiflora rose, the living hedge.

Wildlife borders—How much can wildlife mean to a farm? We believe that the more wildlife our farm supports the better and cleaner and more enjoyable our farming will be. At Cornwell the wild birds get every possible encouragement, as an aid to insect and rodent control, but mainly because we like to have them around us.

Best encouragement will be the thousand-foot multiflora rose hedge our Soil Conservation District is getting for us this spring. This "living fence" will provide food and shelter for thousands of birds and a welcome home for quail, our favorite game bird. Further quail encouragement, also from the district, will be two small plantings of bi-color lespedeza, the most succulent item of all on the bob white menu. Certain birds of prey are warmly welcomed at Cornwell. Congressman Thurmond Chatham, of North Carolina, says that he would rather have two red-shouldered hawks nesting on his place than the services of a fulltime game keeper. The price we pay for the protection of such birds of prey is an occasional quail or songbird. But this is far less than the number of similar birds that would be destroyed by the rodents the hawks control.

Drainage—Drainage is a problem at Cornwell. Two fields require

study, and ditches or a tiling system should be installed to bring off the water properly. But since we can't do everything at once, this phase of our complete conservation plan will have to wait another year.

Woodlot improvement—Previous articles have indicated our interest in trees and the development of our tree farm. A progress report will be coming soon.

Farm Pond—Every farmer, particularly every new farmer from the city, longs to have a pond on his place. He dreams of fresh-caught bass, of a haven for wildfowl and of cool evenings spent along its banks. Then, too, if enough water can be impounded he may well think in terms of installing a system of supplemental irrigation to keep his fields lush over a dry spell.

In our travels we have seen such installations, and each proud owner swears on a stack of Bibles that supplemental irrigation will pay for itself in one year in increased crop yields. We got caught in the swirl of this enthusiasm and having a little unexpected cash at the end of the year were ready to build a pond of our own. Little did we know.

Because of local experience, our friend Harry Parks, district Soil Conservation Service officer, is very much sold on supplemental irrigation. He and his associates ran a study on the

The World's Greatest BINOCULAR VALUES

• BRAND NEW
• GERMAN
• ENGINEERED
• DURABLE
• PORT WAS
• MODERATE

Each instrument precision built to rigid military specifications. Buy direct at lowest unheard of price! Example Model 725: \$155.00 Value, Importer-to-you ONLY \$49.50! Fully Guaranteed. Send for FREE CATALOG and

Free Book How to Select Binoculars

BUSHNELL, Importers Dept. J-2, 43 E. Green Pasadena 1, Calif.

FLY FRONT JACKET
FOR
U. S. FOREST SERVICE PERSONNEL

Made of the Regulation Forest Service Fabrics. Lined or Unlined. Contoured zipper front. Side straps for adjustment. Shirt style sleeves for free and easy movement of the arms. A very practical and comfortable accessory to your field clothes.

Write for New Price List and Sample Fabrics.

THE FECHHEIMER BROS. CO.
Uniforms for Over 65 Years
CINCINNATI 2 OHIO

Do Your Planting Plans Include TreeP, The Only Tree Planting Sled

For new descriptive circular write:
TreeP, Box 163, University Station
Syracuse 10, New York

DON'T BREAK YOUR NECK PREVENT ACCIDENTS CUT LABOR COSTS 50% DOUBLE PRODUCTION!

New, Amazing, **LIGHTWEIGHT ALUMINUM** Comb. Sawing, Pruning, Trimming, Fruit Picking, Shaking Poles.

Curved Type Tree Saw No. 1
No. 2 Cuts 5" Times Faster
Fruit Picker No. 6
BANTAM WEIGHT TRIMMER No. 3
Tree Saw No. 9

SECTIONAL POLES 1/2 WT. OF WOODEN POLES

Combine Sections of Poles to make Poles Up to 90 ft. Tall. Weighs 1 lb. per 5 ft. 60c per ft. Attachments extra. F. O. B. Los Angeles. No Breakage. No Splinters. Lasts Forever. Sections from 2 to 30 ft. Reaches Top of any tree. A 60 ft pole weighs 12 lbs.

SEND FOR FREE CATALOG.

30-foot pole weighs only 10 lbs.

J. B. Seabell CORP.

NOW, by combining Our Sections of Poles, you can make 10 different length Poles out of 1 Pole

By inserting unexpanded end of one pole into expanded end of another and securing with two bolts you can build any desired length of pole.

Sections available in any length from 2 to 30 feet. A 60 foot pole will fit in the back of your car when broken down into 12 five foot sections.

DO A JOB IN MINUTES THAT FORMERLY TOOK HOURS.

300 - S. Los Angeles St. - MA. 6-9397
Los Angeles 13 Nita: Newmark 1-8958

WESTERN RANCHES



A RECOMMENDED LIST OF WESTERN RANCHES ACCEPTING GUESTS THIS YEAR. THESE RANCHES WILL WELCOME YOUR INQUIRY AND WILL GUARANTEE AN INTERESTING VACATION.

The A2Z and Valley Ranches

Valley, Wyoming. Located in the Wilderness Area of the Shoshone National Forest, providing a July Pack Trip for young people, "Range Riders" group for teen-agers, comfortable cabins for families, Pack Outfits for Big Game hunters. Write LARRY LAROM (member A. F. A.).

MOOSE HEAD RANCH

Located in beautiful, historic Jackson Hole, near Grand Teton and Yellowstone National Parks. Featuring outdoor recreation, fine fishing, plenty of riding on a variety of scenic trails, big game hunting. Fun for the whole family, an ideal ranch for children. Open June 1st to Nov. 1st. Reservations in advance, references required and exchanged. For rates, information, write Fred J. Topping, Jackson Hole, Elk P.O., Wyoming.

A REAL OPERATING STOCK AND DUDE RANCH, seven miles from the N.W. corner of Yellowstone Park in the heart of the Rockies. Wonderful trout fishing in both mountain lakes and streams. Horseback rides and pack trips into primitive wilderness. Capacity, 60 guests. Advance reservations—with or without private bath. Rates, \$65.00 to \$85.00 weekly—include cabin, meals, horse, guide & wrangler service, and pack trips. Special rates to children with parents. For further information, write, phone or wire:

NINE QUARTER CIRCLE RANCH
Gallatin Gateway, Montana

DO YOU HAVE A NEW CATALOGUE, OR A NEW PRODUCT TO ANNOUNCE?

As a new service to advertisers and readers, AMERICAN FORESTS Magazine is inaugurating two new departments—one, a listing each month of new catalogues and bulletins. The other, to announce and describe new products. There's no charge for this service, although we reserve the right to select material of the greatest reader interest. Send your material to:

Advertising Department,
AMERICAN FORESTS Magazine
919 17TH STREET, N. W.
WASHINGTON 6, D. C.

site we had selected for our pond. It was on a rocky outcropping just below a fine spring and would be a great asset to our view. His findings: not enough soil to make a wall, no assurance that the pond wouldn't "leak." Then Harry gave us the hard facts of ponds and irrigation. The problem is to make such an installation a profitable one. To do this you must know how much water you will need. The only way to find out how much water you need is to know your soil texture, effective root zone and infiltration rate. Our experience plus our soil test kit are giving us a little knowledge, and we now know that our proposed pond would be a dangerous thing. Until we have more intimate acquaintance with our soil, the farm pond is on the shelf.

But we are on the right track. Our system of grassland farming will increase the fertility and the permeability of our soil. Permeability? That's the rate at which the soil can take on

water. When we know it, we will know how much water we will need for irrigation. This figure taken together with other factors will tell us how large our pond must be. And on its size will depend its eventual location.

In light of the list set forth in the Chester County manual, we seem to be making most progress with their most basic recommendations which, fortunately, are the less costly ones. We are using the principles of contour farming and strip cropping. We have installed a diversion terrace. We are improving and re-seeding our pastures. We are clearing some land to make it more productive. We are tearing out the major obstructions. We are encouraging wildlife and improving our woodlands. But we are standing still when we come to drainage and a new farm pond. We are not ready for them either from the point of view of the pocketbook or of basic required knowledge.

But we'll have those bass someday.

River Basin Development

(From page 44)

stroy forever wildlife, scenic, and natural recreational values not readily assessable in dollar terms.

By comparison with other regions in the United States, the natural resource potentials of the Pacific Northwest are largely untouched. For example, only three million kilowatts of the fifteen million potential in the moving waters of the Columbia have been developed. The piecemeal engineering works thus far launched, such as Grand Coulee and Bonneville, have brought benefits in flood control, hydroelectric power production, land reclamation and navigation. What is now needed is a means whereby all these projects could be interwoven effectively with other structures recently started, such as McNary Dam, being built by the Corps of Engineers on the Oregon-Washington border, and Hungry Horse Dam, under construction by the Bureau of Reclamation on the Flathead River in western Montana, and with the watershed program currently being formulated by the Department of Agriculture for the Columbia Basin.

VII

In summary, where do our current land and water policies lead? We have tried to show in this series of articles that a new look is urgently required by the people of the United States at the numerous expensive projects they are underwriting. Growing water shortages, popping up even in humid areas like the presently-suffering city of New York, indicate that something is drastically wrong with the manner in which the land and water resources are being handled.

The President has recently appointed a Water Resources Policy Commission to survey, presumably, the present unsatisfactory solutions and allay the growing impatience with the plans and projects sponsored by the federal government.

It is to be hoped that this new-born commission will rise above the pressures of vested federal and other interests in going about its task and look at the picture in its totality. It must realize that water problems are also land problems, and give us a thoroughly objective answer.

AUTHORS

ALBERT ARNST (*A Super Race of Douglasfir*) is a forester for the Weyerhaeuser Timber Company. **J. A. COPE** (*The Indomitable Finns Rebuild*) is extension forester of New York at Cornell University. **PAUL E. DENTON** (*Maple Festival*) handles publicity for the Chardon Maple Festival.

Speak Up for our Advertisers

OUR ADVERTISERS are spending their money to reach you because of your influence upon the sale of their products.

By their expenditure they are helping to support your association in realizing the things it is trying to accomplish.

You, in turn, can help our advertisers by buying their products and by recommending their use to other people.

Our advertisers recognize that our membership is unusual in the sense that it has greater than ordinary influence upon people's thinking. Your power and influence are well recognized by our advertisers. They know that your recommendations carry unusual weight in regard to the purchase of their products.

An illustration of this fact recently came to our attention.

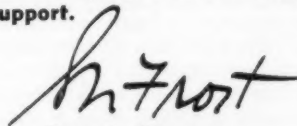
At a town meeting in New England, villagers were discussing the proposed purchase of equipment to be used in connection with road building and snow removal work. When a difference of opinion arose regarding what type of equipment to buy, the village banker, a man recognized for his sound judgment, described a piece of equipment he had seen advertised in **AMERICAN FORESTS**, a magazine he said he had been reading for ten years.

On the strength of this banker's recommendation, the merits of this piece of equipment were investigated. In due course it was purchased.

This is what one **AMERICAN FORESTS** reader accomplished by speaking up for our advertisers. More should do the same. Multiply the influence of this New England banker by 25,000 other readers and you can readily visualize the purchasing power that can be wielded for our advertisers in every community in the nation.

We should help our advertisers because they help us. They, too, are important cogs in safeguarding our forests and related natural resources. They provide the tools and the services that we need to do a creditable job.

In spending their money with us our advertisers are trying to do the things we are trying to do. That is why they deserve our support.



Executive Director

The American Forestry Association

EDITORIAL

Seventy-Five Years of Service

By S. L. FROST

When Dr. John A. Warder, distinguished Cincinnati physician-horticulturist, and a small group of patriotic men and women met in Chicago in 1875 to create The American Forestry Association, they were seeking an organized means of promoting "forestry and timber culture." In an era of reckless exploitation, this group of zealots had spread before them a nation of vast forests already alarmingly scarred by the inroads of uncontrolled fire and timber slashing, with little effort being made to safeguard its resource future.

It called for courage, strong conviction of purpose and tremendous foresight to launch The American Forestry Association into this sea of resource neglect. But in pioneer fashion, Dr. Warder and his followers plunged into the staggering problems before them, a small voice in the wilderness, backed only by their own limited funds, their boundless energies and with a compelling faith and belief in the job they had to do.

Their task was to awaken their fellow citizens to reverse the trend of exploiting the timber resources of the United States.

From a small beginning this pioneer force gradually developed a lusty voice. By April 1882, the stage was set for the greatest gathering ever recorded in American conservation annals — the first American Forest Congress — a meeting of tremendous voice and impact.

The scene was laid at Cincinnati, seven years after AFA's birth. It attracted more than 25,000 people, closed the schools of that Ohio city, occasioned a parade, and a thirteen-gun salute. The promoters had timed their event to coincide with a great Arbor Day tree-planting ceremony. In this gala setting a group of prominent men and women from all parts of the country were assembled by the Association in Cincinnati's famous Springer Music Hall to merge ideas and interests into a program of action.

Specifically, the Association's group outlined for accomplishment such objectives as laws and organizations to control forest fires, the establishment of forest experiment stations, the creation of a federal bureau of forestry and state forestry commissions and the establishment of professional schools of forestry.

That these pioneers planned with excellent foresight is attested to in today's pattern of forestry conservation in America. The government's forestry efforts are headed by an excellent U. S. Forest Service, administrator of 179 million acres of national forests, twelve experiment stations, a forest products research laboratory and many other functions. There are forty-four state forestry departments, an organized system of fire control on 571 million acres, twenty-two professional forestry schools, many forest tree seedling nurseries, almost eighteen million acres in state forests and parks, ten million acres of town and county forests, and a system of 174 national parks and monuments embracing approximately twenty-one million acres.

In addition there are forty-eight state forestry associations and related citizens' organizations and a number of national organizations working for better forestry. The subject of

forestry and conservation is being taught in many public schools. Finally, there is a tremendous surge of improved forestry being promoted and practiced on many million acres of private land sparkplugged by landowners and an aggressive industry.

The trend of forest destruction which shocked Dr. Warder and his small band in 1875 has been reversed in this vast and powerful surge of forestry conservation that is under way in all its myriad activities in 1950 — the 75th anniversary year of The American Forestry Association.

Through three quarters of a century the Association has been part and parcel of this growth, providing through its officers and members vision, voice and organized leadership to bring about a better handling of the forests of the United States in order that they may perform their highest service in the development of the nation.

The directors of the Association are looking ahead to help solve many of the knotty problems that still loom on the horizon. Its blueprint for future operations is set forth in its thirty-point Program for American Forestry, drawn up in 1946 following the Association's quarter of a million dollar survey of forest conditions.

It currently has a task force of many individuals and organizations engaged in a survey of American forestry progress in the past five years, and proposes to conduct this impartial fact-finding survey every five years to keep abreast of conditions. It has plans for fact-finding research and for charting a plan of action to overcome problems of forest taxation, forest credit and forest insurance which stand as barriers against successful private forest management in many sections of the country. It proposes to lend its energies to a nationwide program of reforestation millions of still idle acres. It will dive into the problems of forest insects and diseases which ruin more timber than fire. It will work with groups in an attempt to find new markets for wood products.

It recognizes the vital part that forests play in the nation's mounting water problem and will direct its energies in that field, too.

In brief, with the continued and growing support of its thousands of members it will, as always, provide this nation with a unique organization unrestrained by any self-interest, able to act impartially and without fear for the improvement of forestry conditions in America.

Like its founders, The American Forestry Association of 1950 and of the years to come will offer unselfishly to the American people its convictions, its sincerity of purpose and its energies to help get a job done.

1875-1950

The American Forestry Association

Like a tree's roots — firm in the soil.

Like a tree's crown — reaching for new horizons.

DEPENDABLE POWER

BEYOND THE REACH OF POWER LINES

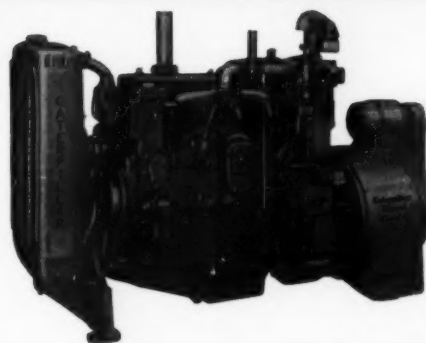
To remote ranger stations and isolated settlements "Caterpillar" Diesel Electric Sets bring all the benefits of commercial power. Ruggedly built and thoroughly tested for efficient operation, they require a minimum of your attention. They start easily in coldest weather—and once started, you can rely on them for dependable, economical electricity day after day, month after month. Using very little fuel, they are practical even in spots where supplies have to be packed in.

There's no better proof of dependability than records of performance in actual use. Your "Caterpillar" dealer has files of such factual data on "Cat" Diesel Electric Sets. Ask to see them—they'll give you an idea how useful one of these sturdy, reliable units can be to you!

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

LOOK UNDER THE HIDE

Subject to thrust and shock, crankshafts must be rugged. "Caterpillar" crankshafts are superior quality steel forgings, accurately machined and balanced. Main bearings are on each side of crankpin journals. Large-radius fillets reduce stress concentrations while end thrust is absorbed on polished thrust surfaces. "Hi-Electro" hardened for maximum service life and Super-finished to within five-millionths of an inch of true surface smoothness, these crankshafts are tops in design and craftsmanship. Look under the hide for quality.



CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL

ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO., Box AF-3, Peoria, Illinois

Send me, without obligation, booklet, "On the Job Power."

Name _____

Address _____

Read What Users Say About INDIAN FIRE PUMPS!

ACTUAL UNSOLICITED TESTIMONIALS TAKEN DIRECTLY FROM OUR FILES



"Saved A Store And Several Buildings"

We consider your **INDIAN FIRE PUMPS** one of the most important pieces of equipment in our company. Just two days ago we saved a Dry Goods store and several other buildings with small water damage by using **INDIANS**.

INDIANS play a large part in extinguishing many of our fires and we intend to get more in the near future.

J. S. Williams

"Firemen Prefer **INDIANS** To Any Other Extinguisher"

I once thought **INDIAN FIRE PUMPS** had use only where a volunteer department was putting out grass fires. Since including a No. 90 galvanized **INDIAN** on our apparatus, however, I found that the men would not use any other type of extinguisher.

That led me to buy a number of No. 90 solid brass tank **INDIAN FIRE PUMPS** and place them on all our equipment. Our men are most enthusiastic about **INDIANS** and prefer them to any other hand extinguisher for all Class A and small oil fires.

George P. Lasher, Fire Chief



"In No Time At All Had The Fire Out"

Today, I glanced out on the street and saw smoke coming from the hood of an automobile parked in front of my building. I rushed out and a man and a woman had gotten out of the car and raised the hood. A nice flame of fire had developed.

I rushed back in my store and got one of your **INDIAN FIRE PUMPS** and in no time at all had the fire out. Someone called the fire department, but I had the fire out before they arrived.

I bought these **INDIAN FIRE PUMPS** from you three years ago. They had been standing filled with water but never used until today—they worked perfectly.

A. G. Preston, President
Utica Office Supply Co., Inc.



If you, too, have used **INDIAN FIRE PUMPS** to advantage why don't you tell us about it? We would like to hear from you.

Agents Wanted

FOR DESCRIPTIVE INFORMATION ON THESE
FAMOUS FIRE EXTINGUISHERS WRITE TO

D. B. SMITH & CO. UTICA 2, N. Y.

!



ed in

sed

ad

three
ter

.

1.